ELECTRICAL WEST

WITH WHICH IS CONSOLIDATED
THE JOURNAL OF ELECTRICITY

McGraw-Hill Co. of Calif. JANUARY 1, 1933 Twenty-five Cents per Copy

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"From the time electric ranges first came on the market, 19 years ago, I have used one myself at home, and our store has sold many more in Marin County, California. But through all these years we have had to fight the battle single-handed, against the established cooking habits and the lack of knowledge of electric cookery in our community. The National Electric Cookery Council should do us all a world of good by helping to *tell* the American housewife so that we can more easily *sell* her a range."

Electrical Contractor Dealer
San Rafael, California

WITHOUT an effective, nationally co-ordinated group of LOCAL councils, the National Electric Range Campaign—and the profits every factor in the industry can derive from it—will fall far short of the mark.

And without *you*, no Local Cookery Council can function properly.

Real Business is at Stake . . . Local Organization Essential

Every electric range you sell under the N. E. C. C. Plan not only offers you a substantial profit, but opens the way to other appliance sales. The electric range is the bellwether of the electrified kitchen.

Here is business that is worth going after—now. The sales quota of a million ranges in three years can be met—*with your help.*

No one can do this job alone. Individual effort won't do. Unified, co-operative action will. Get together with the Local Power Company and with the other dealers and contractors in the community. Organize your Local Cookery Council on a basis of mutual co-operation and profits for all. Start selling electric ranges.

The national advertising is already prepared. It will not be released until a sufficient group of Local Electric Cookery Councils (or corresponding co-operative units) has been organized to cash in on the business it will create for us all. Your action will determine when this advertising gets under way.

For further information and assistance, address your inquiries to the National Electric Cookery Council, 420 Lexington Avenue, New York City.

"There is no question but that the electric range business will be our greatest method of increasing kwh. consumption.

"By getting actively behind the National Range Campaign through our own co-operating Local Cookery Councils, we can get universal acceptance for the electric range all over the country . . . to the profit of dealer, contractor and utility alike."

J. F. OWENS
President, Oklahoma Gas & Electric Co.

"We are vitally interested in the National Electric Range Campaign. No campaign like this can go on for three years without selling the public the advantages, not only of electric cooking, but of additional electric service.

"This means more money going to the electrical industry, and whenever the industry prospers, we prosper. From the contractor's standpoint, the campaign must succeed."

JOSEPH T. KIRCHNER
Treas., Biggs & Kirchner, Inc., Washington, D. C.

NATIONAL ELECTRIC COOKERY COUNCIL

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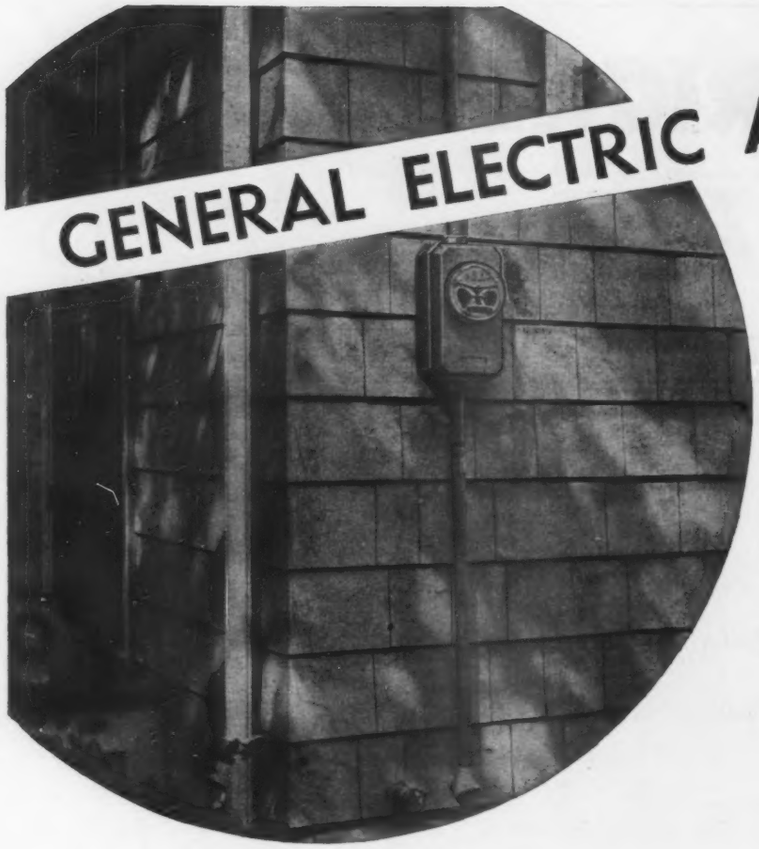

GENERAL ELECTRIC ANNOUNCES

A NEW PROTECTIVE CASE FOR WATTHOUR METERS

EVERY feature essential to the protection of watthour meters is embodied in this die-cast aluminum case. It is strong, durable, and corrosion-proof—a case that will protect your meters against the most adverse weather conditions for years. In addition, it protects your revenues because access to the meter is impossible without leaving positive evidence.

The space between the meter cover and the box cover is tightly sealed against the entrance of moisture by a thick rubber gasket, which is under compression when the case is closed. Should water seep through the joint between the two parts of the case, a dam prevents it from running down into the conduit and it passes out of the case through drain holes.

Special attention has been given to attractive appearance—a valuable feature in promoting the use of external meters for dwelling houses.

A card to our nearest office will bring you a copy of GEA-1243B describing this equipment in detail. General Electric Company, Schenectady, N. Y.

600-44

GENERAL ELECTRIC

CAMBRIC CABLES

ROEBLING Varnished Cambric Cable has proved its fine workmanship and great dependability in a wide variety of services.

Central stations, substations, mines, steel mills, cotton mills and other industrial plants use it for power, heat, or lighting circuits. It is also commonly used for generator, motor, transformer and oil switch leads.

Available in single, two and three conductor types; for wide range of voltages; in gauges from 2,000,000 circular mills to No. 14 B. & S.; braided or leaded; also with steel, zinc or bronze tape, or round steel wire armor.

We invite your inquiry for further data.

Rubber Covered Wires and Cables : Braided and Leaded : Code; Intermediate; 30% :: Power Cables : Paper; Cambric; Rubber :: Submarine Cables :: Tree Wire :: Parkway Cable :: Service Cables :: Station Cables :: Rubber Covered Control Cables :: Slow-Burning Wires and Cables :: Weatherproof Wires and Cables :: Police-Fire Alarm Cable :: Portable Cords :: Annunciator Wire :: And a wide variety of other wires and cables.

JOHN A. ROEBLING'S SONS COMPANY OF CALIFORNIA

San Francisco Los Angeles Seattle Portland

Export Dept., New York

ROEBLING

The Season Is On

The Market Is Open

For Record Sales of Electric Heaters

Everything is in favor of a record sales season for electric air heaters. Winter will still be on in earnest for several months. Sales of electric heaters have been good. They will continue to be good.

Large space newspaper advertising, billboards, window display and bill stickers will be used by this company to tell people why extra heat is needed and why an electric heater is quicker, cleaner, and more convenient to use. Each newspaper advertisement says "see your local dealer," lets people know *where* an electric heater may be bought.

Keep up the sales of electric heaters that began with the December cold snap. Give electric heaters prominent window and store display. Advertise locally to tell people *who* you are, *where* you are, and that you SELL electric heaters.

The market is open. Make it a profitable sales market for electric heaters for several months to come.

P · G · and E ·

EW-101-133

PACIFIC GAS AND ELECTRIC COMPANY

OWNED . OPERATED . MANAGED BY CALIFORNIANS

ELECTRICAL WEST

With which is consolidated the Journal of Electricity
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Volume 70
Number 1

G. C. TENNEY, *Editor*

Just Supposin'

MAYBE IT comes from the bed-time stories of giants and fairy god-mothers who turned pumpkins into golden coaches for Cinderellas to ride in. At least, among children, as yet unaware of the realities of life, it is a prevalent pastime to pretend, to "play like," to suppose this and that. Playing with dolls and toy trains is constructive day dreaming, but sometimes the atavism persists in a negative sense—supposing dangers, horrors and plots that do not exist.

A great deal of mature supposing goes on these days: "Supposing France doesn't pay the war debts—ooh!" "Suppose the Manchurian situation gets worse, even war!" "Suppose times don't get better, that employment doesn't improve, that prices stay down, that the hunger march starts trouble . . . . " The list is infinite, and the discouraged pessimist will view with alarm along these lines until he cannot even enjoy the food he still has to eat. That is one type of "supposin' " that is all too prevalent.

On the other hand, there is a grown-up supposer who thinks wishfully: "Suppose good times come back—oh boy!" "Suppose we can clean up on a stock deal." "Suppose we can do thus— and so." Still day dreaming, building castles, running marvelous train systems, conquering dragons and rescuing fair maidens.

But there comes a time—or there should—when the day dreams are brushed aside. Neither the paranoiac viewing with alarm nor the wishful thinking are actual; the healthy normal attitude is "what of it?". The facts are neither so black nor so rosy as they might be. There is improvement in some things; perhaps there must be retrenchment in others. But wishing won't improve it; neither will a case of nerves. The electrical industry still is young; naivete, not nervine, is needed. The industry still has a brilliant future; but wishing must give way to working, if the ascent is to continue. "Supposin' " we go to work.

Editorial

With this modern benediction, this common-sense attitude toward the future, ELECTRICAL WEST expends on the industry what wishing and supposing it has in its system, in the spirit that 1933 will be better, and even possibly more prosperous, because we believe the electrical industry is ready to give up "supposin' " and to tackle the realities cheerfully—like men.

Facts Will Clarify Merchandising Delusions

MUCH of the force back of agitation against utility merchandising is emotional rather than logical. Lack of understanding of both the purpose and intent of utility sales activities permits the issue to become beclouded so that facts are overlooked entirely. With facts marshalled and presented logically to the objecting parties of the industry, the story of utility load-building can be told from the standpoint of the self-interest of both power companies and dealers.

Recent studies conducted in Portland produced facts of the type needed to clarify the argument: During the last few months a dealer sold 101 electric ranges. Check of the power company's own range prospect lists revealed that 58 of the purchasers had received 303 calls from the company's range salesmen, or an average of almost six calls each. In these 58 cases, who sold the housewives the idea of electric cookery? Would the ranges have been purchased without the sales activity of the power company? Did the dealer benefit?

In another instance a power company spent $200,000 in one year advertising through bill-

boards, direct mail and newspapers the advantages and services of electrical appliances without mentioning specific brand names. Naturally, this advertising was followed up by an active sales organization. Yet the dealers outsold the company seven to one. Would the dealers have sold $14,000,000 worth of appliances in that territory without the power company's advertising?

By giving widespread publicity to facts such as these, much of the misunderstanding which threatens to hurt all branches of the industry can be avoided.

It Is Time To Battle

EVER SINCE the Japanese lamp invasion became serious, and even before that, when cheap American-made lamps began to eat into the sales of standard lamps, the industry has conducted a battle of passive resistance: "Don't mention the cheap competition and the public will never know of it."

But the public did know of it, and bought the cheap lamps. The strategy didn't work. Now it is time to really fight.

Hygrade-Sylvania Corporation has torn off the lid of silence. In a nation-wide advertising campaign the company has exhibited the "boogey" in telling why the Japanese lamps are cheap in price but expensive in cost. Even if the industry wanted to maintain its passive resistance, it can't be done. The invaders have been called; the best strategy is an immediate and overwhelming attack.

There is no denying the fact that the Pacific Coast has been hardest hit by foreign lamp competition; closest to Japan, the port of entry for her goods, it is only natural that this section should suffer most. It also is natural that this should be the major battleground of the fight.

And it is an industry job. Manufacturers and wholesalers suffered directly from the competition; it is their ammunition which should be used. But power companies are victims, too, through consumer dissatisfaction and lost good will. Retailers of standard lamps are hurt by lost sales and the loss of habitual visits by customers who heretofore needed lamps.

Typical of the power company situation is the case of a California utility, one of whose customers phoned in a complaint that her light bill was too high, that it was far greater than the bill for any previous month. The customer was indignant; she had been overcharged.

A troubleman, sent to the premises, examined the meter and wiring. Both were in good condition. Stumped, but certain that there was a reason for the excessive use of electricity, he queried the customer about her appliances, about the possible inordinate use of light during the month. Finally he uncovered the fact that she had relamped her house with a cheap variety from a 5-and-ten-type store.

Explaining did no good; the troubleman had to test the two grades of lamps with the customer as witness before she would be convinced that the cheap lamps used more current than the standard. Even then, when the utility employee advised her to be careful of her lamp purchases and to pay the higher price for the better lamps, she accused the power company of championing the cause of "big business" in upholding a "preposterously high" price for lamps and in trying to drive out the small competitor.

In proving itself right, the utility was forced to prove the customer wrong; her dissatisfaction was inevitable.

Multiply this case by the multitude of similar cases throughout the country; the result is a tremendous loss in intangible good will secured by a tangible expenditure of money, to say nothing of the cost of the time spent by employees in placating the customers.

In laying the foe, the appeal to the public should be made, as Harry J. Bauer urged last month in these columns, "not on the false ground of altruism, but frankly on the basis of enlightened self-interest." It helps America to buy American lamps, right now, and Hygrade-Sylvania is using that story.

Regulation Debased by Tactics in Oregon

JUST at the time when the very principle of state regulation of utilities is under fire and when proponents of federal regulation are preparing for a strong drive in Congress, it is regretable that developments such as those taking place in Oregon should occur.

Faced with the task of making operative the constitutional amendment permitting state entry into the power business, Oregon legislators are discovering that the electroate apparently has added to the confusion of an already unsatisfactory situation by superimposing on an industry already beleaguered with restrictions, regulations and red tape, another commission of an elective character.

And, as if this legislative muddle were not enough, the present one-man commission is giving full rein to the authority vested in his position, with the result that every power company is involved in regulatory proceedings of one kind or another. Nor is this exercise of authority confined solely to considerations of valuations and rates. The accusation is being made that, under the cloak of regulatory authority, there is taking place an invasion into the field of management not consonant with either the spirit or the letter of regulation. In defense, the utilities are forced to turn to the federal courts.

In the light of this situation, popular respect for regulation is certain to diminish. For years the light and power industry has promoted and cooperated in the development of sound regulation. Its experience has been that state regulation can improve, protect and stabilize legitimate enterprise and at the same time effectively guard the interests of both customer and investor. Regulation that exceeds the bounds of reason is inimical to all of these as well as to itself.

P. M. DOWNING compared electric and milk rates; the other day another electrical man said it in eggs. Of the minimum charge per kilowatt connected above an 8 kilowatt allowance, said he :"It's like going to a grocery store to buy some eggs. If you buy eight eggs you can get them for three cents each, but for the privilege of buying four more to make an even dozen you must pay a one-cent charge on each egg, plus the cost of the eggs." That, perhaps, is why all-electric home customers sometimes appear before the complaint desk in an egging mood.

Utilities Must Fight Higher Tax Burdens

HARD PRESSED for money to meet expenses of government, politicians in practically every Pacific Coast state are casting hungry and acquisitive glances at the power companies. Measures to increase taxes on public utilities will be presented before most legislatures to provide revenues to offset impending deficits.

Despite arguments to the contrary, the placing of additional tax burdens on the power companies at this time is not in the public interest, for it is the public who finally will foot the bill. Review of the utility tax situation in California offers evidence of the already top-heavy load now shouldered by the public through taxes levied upon the utilities.

The tax bill of the power companies of California aggregates 11 per cent of gross revenues at the present time. They must compete in rates and service and in attracting industries to this territory, with other utilities throughout the country whose average tax is only 9.96 per cent of gross. They must compete with municipally-owned utilities, such as the Los Angeles Bureau of Power and Light, who pay no taxes at all. The manufacturer or farmer in California who pays $1,000 annually for his electric service gets only $890 worth of electricity—taxes account for $110. The householder or small commercial customer who pays $100 annually get only $86 worth of service, for an additional three per cent goes to the federal government.

In the case of the largest utility in California, taxes paid in 1931 exceeded by almost two million dollars the dividends paid to 60,000 preferred stockholders—$9,608,210 in taxes against $7,803,-316 in dividends. In denying an application made by farmers and municipalities for a $3,000,000 rate reduction, the California Railroad Commission found in the case of this company that earnings were too low at present levels to justify any reductions. Yet the proposed tax legislation would exact almost the same amount in additional taxes.

This is no time for talk of tax increases. Utility revenues are down. Necessity for curtailment in operating expenses has resulted in reduced payrolls and unemployment. It would be far better to devise measures to get payrolls up to normal. Nor can the utilities perform such miracles as satisfying one group which seeks lower rates and another which demands increased taxes.

One step which the power companies can take to impress upon consumers the heavy burden of taxes now carried is to print the amount of taxes upon every bill for service. Unless public support is enlisted, taxes will continue to mount.

NOW we know why the country went to the dogs under the Republicans. A recent magazine article tells how Calvin Coolidge, in remodeling his house, called an electrician. The contractor came to give him an estimate, but was asked by Cal, "Where are your overalls? Aren't you ready to go to work?" And in the corner of the room was a complete stock of wire, outlet boxes, fittings, tape and pipe, which, examination proved, Cal had bought from a mail order house.

Low-Cost Regulation for Rural Substations

By H. T. SUTCLIFFE
Pacific Gas and Electric Co.

Tap-Changing Auto-Transformers for Bus Regulation Meet the Demand for More Economical Equipment That Will Provide Higher Standards of Service Which Now Are Required in Rural Areas

IN THE territory served by the Pacific Gas and Electric Co., a considerable portion of the rural load is supplied from star-connected circuits nominally rated at 11,000 volts. At the time many of the substations feeding these circuits were installed, no provision for voltage regulation was necessary in order to supply perfectly satisfactory service to the comparatively lightly loaded areas around them.

Due to load growth, with consequent increase in feeder lengths, and to more exacting voltage requirements of domestic appliances, it later became necessary to install regulating equipment at such stations. Until recently it was common practice to rely upon three general types of equipment for bus regulation. These three types were, in order of preference:

Gang-operated automatic tap changers, manufactured after our own design and used in conjunction with the main transformers, a large percentage of which originally were equipped with built-in regulating windings;

2,300-volt induction regulators with shunt and series transformers; and

7,200-volt, single-phase, or 12,000-volt, 3-phase, induction regulators.

A relatively new and interesting development in regulating equipment, however, now offers a more economical means of regulating such 11,000-volt buses than any of the methods mentioned: Two of the manufacturers recently have offered a 3-phase regulating autotransformer, equipped for automatically changing taps under load, with a voltage range of 10 per cent buck and boost in eight steps of 2½ per cent each. These equipments are relatively economical and furnish sufficiently close regulation for the service demanded of them. Tap-changing equipment used was developed originally for use on primary network systems and on power transformers in small substations. This company now has in service four units of this kind, regulating the 11-kv. buses at four rural and suburban substations, and comprising one 1,500-kva. and one 3,000-kva. unit of each make.

Figs. 1 and 2 illustrate the general appearance and principles of internal connections of the units of both makes, Fig. 2 being an installation photograph and showing the relative simplicity of the connections required. These include only disconnecting and by-pass

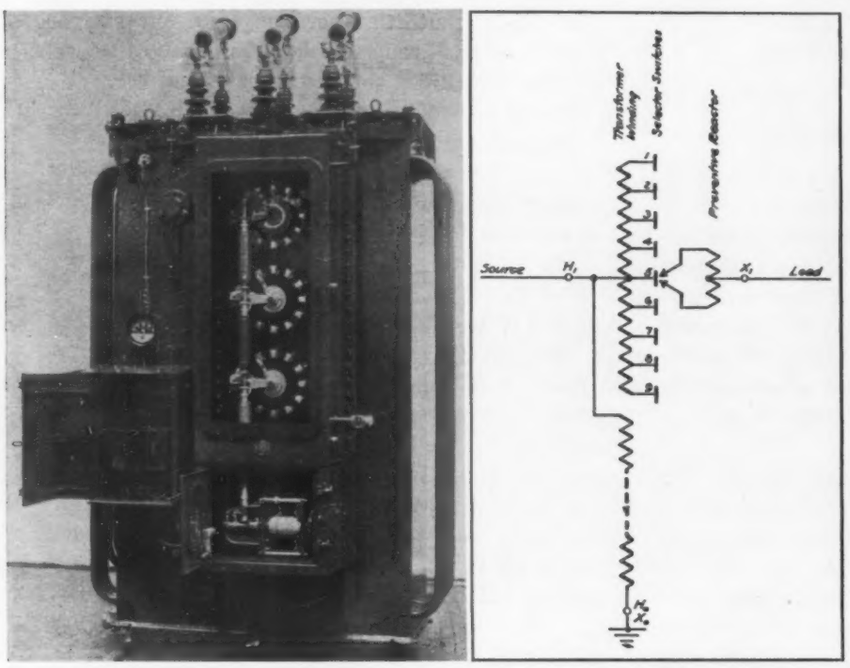
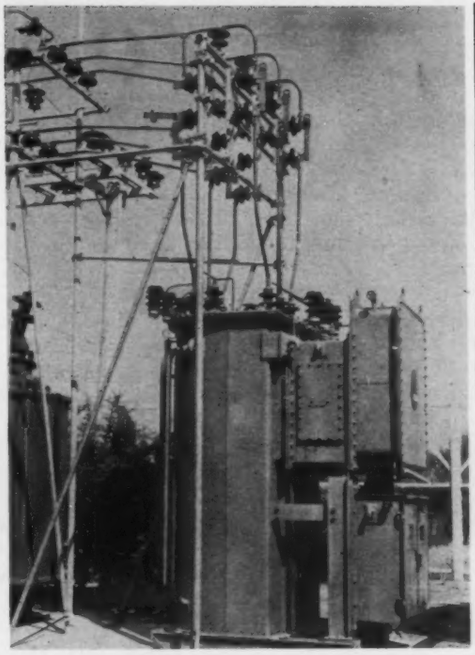


Fig. 1.—One type of tap-changing auto-transformer regulator, showing tap-changing mechanism and one phase of the connections. Incoming lines are connected directly to the 3-phase primary winding terminals, which also are connected to the series winding, which, in turn, adds or subtracts the required voltage steps. Circuit interruptions during transitions between steps and prevented by a novel type of twin ratio adjuster, the two contacts of which are connected to each end of a reactor. Normally, both contacts rest on the same tap; when changing voltage, one contact moves to adjacent tap, followed immediately by the other. During this operation, a predetermined short-circuit current flows in the reactor, due to a momentary short across the winding between taps.

Adjustors, located in separate upper compartment, contact nine tap studs provided for each phase. Studs are provided with front and rear contact clips and protrude through the insulating panel, being connected inside to the transformer leads. Each of the two movable arms of the adjustors are insulated from each other and actuated by insulating Geneva gears, the speed of transition from one tap to next being 1/25 sec. No regulating effect is obtained when contacts are on middle tap, bucking or boosting occurring as contacts move toward either winding end.

Sequence of operation is effected by a high-speed, spring mechanism driven by a 1/100-hp. motor, controlled either by a manual switch or a contact-making voltmeter. Adjustors on all three phases are operated simultaneously through a vertical driveshaft driven by the single mechanism shown in lower compartment. Driveshaft is led through bottom of adjustor tank through a frictionless, oil-tight, mercury-sealed bearing, the insulation between phases being tubular insulating couplings.



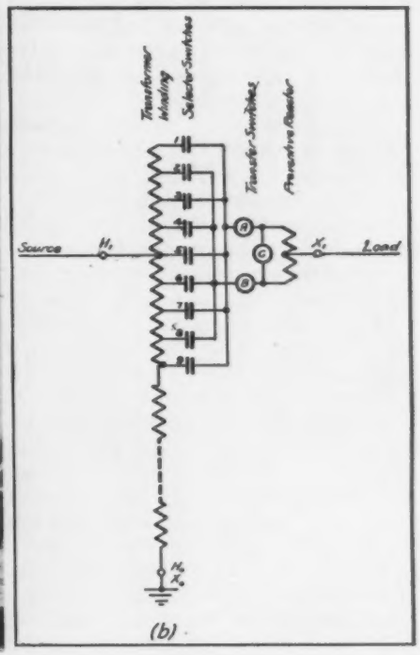


Fig. 2—Installation view and connection of one phase of the second type of tap-changing autotransformer regulator used by Pacific Gas and Electric Co. This regulator employs a mechanism of three load transformer switches (A, B, C) and nine tap selector switches (Nos. 1-9) for each phase. To follow sequence of operations, assume equipment is in operation on tap No. 1 and is moving to tap No. 2. In making this step, switches will operate in following sequence: Selector switch No. 2 closes, transfer switch C opens, transfer switch B closes, transfer switch A opens, transfer switch C closes, selector switch No. 1 opens. In transferring from tap No. 2 to No. 1, the sequence is reversed. Under all operating conditions, voltage of mid-point of preventative reactor is the same as that of tap to which selector switch is closed. As load transfer switches perform all load switching operations, arcing is confined to switches A, B, and C, and these are designed to change taps successfully during line short circuits, should such conditions arise.

Transfer switches are mounted in a separate oil-tight housing directly above mechanism housing. This compartment is provided with a vent, oil gage, hand holes for inspection of contacts, and drain and fill plugs. Oil therein may be drained independently and cannot contaminate oil in main tank. Switches are operated by insulating pull rods fastened to a yoke so that corresponding switches in each phase operate together. Switches are forced open and closed, the opening of arcing contacts being accelerated to minimize burning.

Tap selector switches are mounted in a separate housing directly in rear of transfer switch compartment. As before, oil in this section is independent of that in all other tanks or housings. Selector switch unit for each phase is made in two sections, each operating alternately and in correct sequence, controlled by a cam and a Geneva gear mechanism.

Mechanism is of motor-operated type, enclosed in housing directly below transfer switch housing. Geared to the motor is a vertical shaft, at the upper end of which are bevel gears for driving Geneva gear and cam.

switches for isolating the regulating equipment when desired.

The particular mechanism described in Fig. 1 has an upper current limit of 100 amp., which lends itself to placing the taps directly in the series winding of the 1,500-kva. unit. On larger sizes, the current on the tap-changing mechanism is brought within this rating by the use of a separate 3-phase series transformer in the same tank. The latter transformer receives a variable excitation from the tapped winding, which then constitutes the secondary of the main regulating transformer.

High speed in changing from one tap to the next, characteristic of this type of tap-changing mechanism, greatly minimizes arcing, manufacturers claims indicating that at least 200,000 operations can be expected before replacements are necessary. Similar mechanisms in service on the system have operated 15,000 times with no appreciable indication of contact burning.

Accessories furnished with each of these equipments include a position indicator, a limit-switch for the control-motor, a hand-crank for manual operation, a suitable safety-switch to protect the motor in case of possible broken coil spring, and a cyclometer counter for indicating the number of operations.

A standard induction regulator control panel is mounted in a steel weatherproof cabinet located at the side of the motor mechanism housing, and a selector switch throws the control from automatic to manual operation. The motor, being small and operating through a large gear reduction, is controlled directly from the contact-making voltmeter without intermediate relays.

Automatic operation of the mechanism described in Fig. 2 is initiated by means of a primary relay. In order that momentary voltage fluctuations shall not cause needless operations, a time delay relay is interposed between the primary relay and the operating mechanism. This relay resets instantaneously when de-energized, making it necessary for a fluctuation to last a number of seconds before a tap change occurs. The control circuit is so arranged that, should the voltage fail during an operation, the mechanism will restart and complete the tap change upon restoration of the voltage. As the preventative reactor normally is short-circuited, the exciting current and iron losses are eliminated from the circuit, but it is designed to carry full-load current continuously on any point should the control voltage fail during an operation.

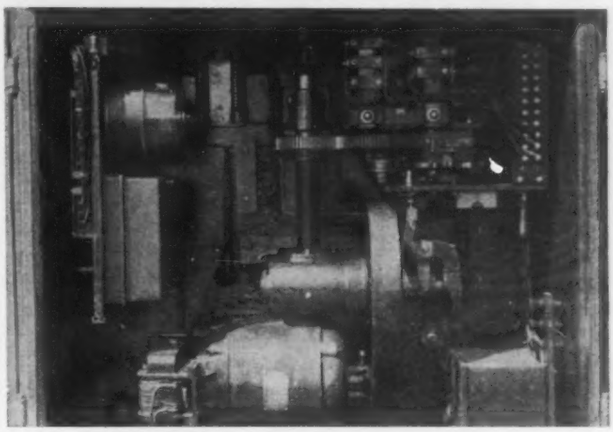


Fig. 3—Arrangement of equipment in control cabinet of unit shown in Fig. 2.

All automatic equipment, including the line-drop compensator, timing relay and necessary auxiliary contactors, is located within the mechanism housing as shown in Fig. 3. Means also are provided for manual operation of the equipment.

Because of their design, transfer switch contacts should require little maintenance. This also is true of the selector switches, as no arcing occurs on these contacts during normal conditions, the time interval between the opening of the transfer switch and the closing of a selector switch being designed to allow for a complete extinction of the arc on the contacts of the former before the tap-changing switch makes contact.

All of these units are self contained and require only to be connected in series between the power transformers and the bus or line which is to be regulated. In both types, the necessary current and potential transformers are contained within the main tanks, the voltage transformers being suitably compensated to supply the control devices as well as the contact-making voltmeter without affecting the accuracy of the latter. Appropriate lighting or surge arresters are mounted as an integral part of each equipment.

In capacities above 1,000 kva. and up to the limit of the present available sizes, this type of regulating device permits of lower cost bus regulation than any other equipment yet used by the company in conjunction with existing station banks*. For example, the 3,000-kva. unit showing a saving of around 35 per cent of the cost of an equivalent 300-kva., 3-phase, 12,000-volt induction regulator. Its weight is less by about 10 per cent, and the installation cost, including structural work, disconnecting switches, connections, etc., is about the same.

It is quite true that power transformer banks of these capacities with built-in load-ratio control and group drives can be obtained at a slightly lower over-all cost, and such equipment is attractive when it is necessary to purchase new banks. In the four applications made to date on this system, however, it was not necessary to change the power banks. Even where transformer changes are involved, transformers removed from other stations or obtained from stock often are utilized, and these, being older, require some type of external equipment if regulated service is to be supplied. For such applications, the regulating auto-transformer appears to be the most economical equipment available at the present time.

Due to its nature, the device can be by-passed and disconnected without interrupting the circuit, which is an operating advantage not possessed by the 3-phase induction regulator. In this respect and in that it produces no phase shift, its operation resembles more that of a bank of three single-phase regulators.

In operation, voltage adjustments are made in the same manner as with an induction regulator. By proper adjustment and compensation, maximum over-all voltage variations not to exceed 3½ per cent are attainable at the average load center. While the regulation is neither so close nor so smooth as that obtained with an induction regulator, it is entirely satisfactory for rural distribution, especially where bus regulation, with its necessary compromise, is relied upon.

As for maintenance, these regulating units have been in service only a few months and it is a little early to draw general conclusions as to the amount which they may require. A few minor troubles were brought to light at the outset, as might be expected in a new development of this kind, but these were remedied and the equipment now is giving satisfactory service. From present indications it would appear that the maintenance will not appreciably exceed that required by an induction regulator. The use of this type of equipment permits of relatively economical regulation within the limits of its application, at the same time providing that flexibility so desirable in a growing territory.

*For more detailed cost comparisons see "Voltage Regulation in Distribution Substations," ELECTRICAL WEST, May 15, 1932.

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Mobilizing Personnel For System Trouble

Emergency Reserve Corps, Organized To Combat Severe Weather Conditions, Aids the Puget Sound Power & Light Co. in Rendering Maximum Public Service in Spite of Reduced Construction Forces

PROLOGUE

Time: 12:30 a.m., Jan. 15, 1933 (Sunday).

Place: Bedroom of Bill Smith, draftsman of the Puget Sound Power & Light Co. Bill has retired early and is asleep when the 'phone rings. He turns over, picks up the 'phone alongside of the bed and answers sleepily.

Chief Load Dispatcher: Bill—this is Henry. There is a sleet storm sweeping over the city and plenty of trouble already. Will you jump in your car, pick Miss Jones up at 5516 17th Ave., right near your place, and bring her down to headquarters to man the switchboard. Calls are coming in too fast for us.

Bill: O.K., Chief. I've got that address. What next?

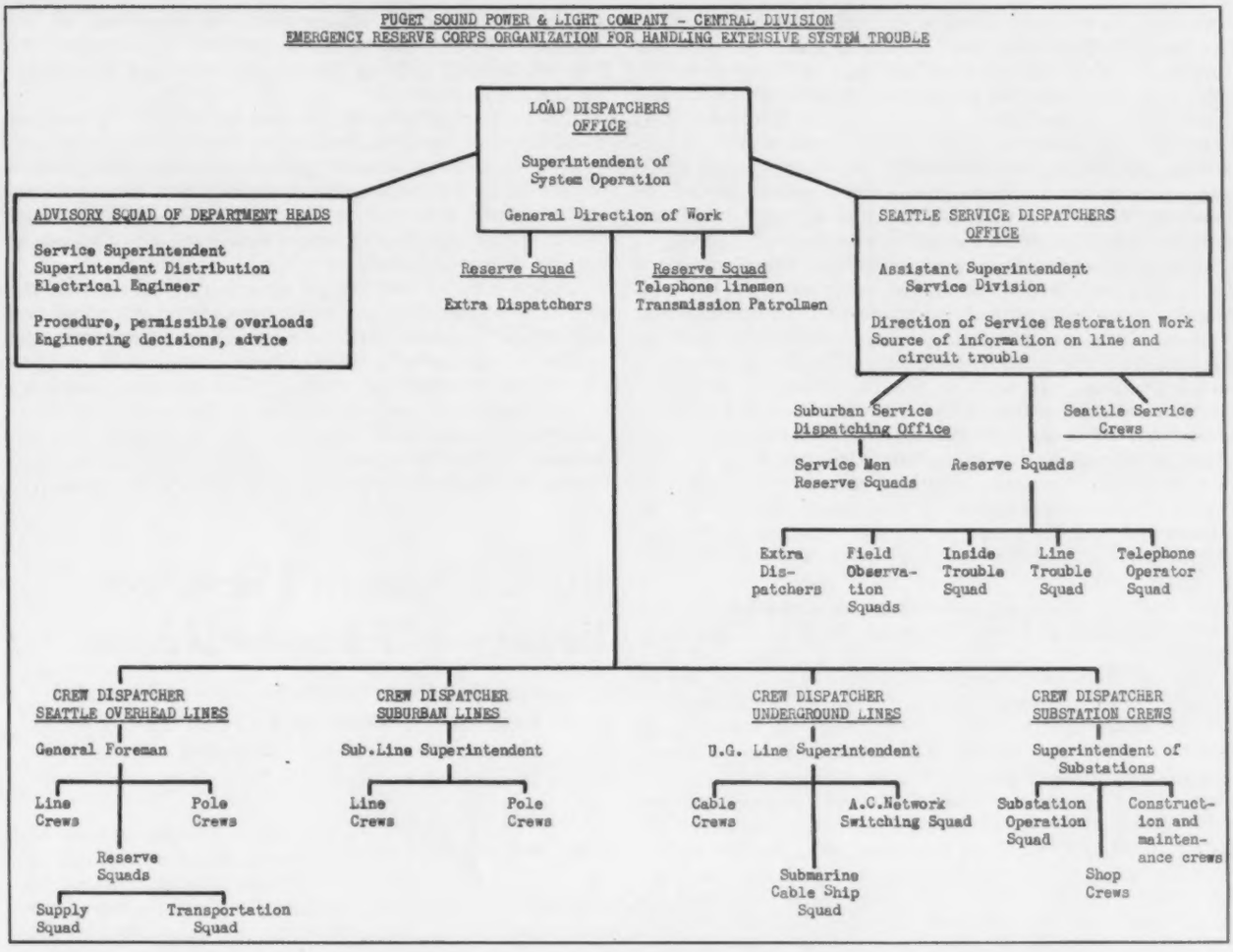
L. D.: Report over to the warehouse. They probably will need a man to help getting materials and men over to some of the jobs.

Bill: I'm on my way. Good bye.

Bill dresses and rushes out to the garage, leaving a technically-minded audience wondering why any utility should be calling out the office force to restore service.

THIS BRIEF glimpse of what might happen is a hypothetical, but by no means improbable, example of the smooth functioning of an organization mobilized for emergency conditions in the interest of better public service. With the prevalent reduction in construction work and the need for economy, many operating companies have had to make reductions in the number of employees, particularly among those engaged in construction. This has presented a problem in handling service restoration work following storms and general system trouble, as a much smaller number of construction crews is available during emergencies to augment the regular maintenance and operating forces. Puget Sound Power & Light Co.'s central division has met this situation by setting up a special organization known as "The Emergency Reserve Corps," which provides means for quickly drafting into service a considerable number of employees from various departments, who are not normally engaged in handling maintenance and trouble work. During such emergencies the usual organization lines are superseded.

In many organizations there are numerous employees



whose normal duties are in connection with engineering, inspection, patrolling, radio testing, shop work, meter work, commercial work and office duties, whose experience and training may have fitted them for certain work which is of value during emergency trouble. This is especially the case at present, as many skilled men have been assigned temporarily to other duties in order to keep them employed and available for later needs when business improves. Such employees have been listed carefully and organized into a number of squads, according to the different functions and work they are capable of handling. Each squad chief lines up his men in advance, acquainting them with their duties under emergency conditions, arranging for transportation and equipment for their use and furnishing the dispatching offices with the names and telephone numbers of the men available.

In this company's organization, the commercial department includes a service division which handles work between the service pole and the customers' house in overhead districts, meter installing and service conditions on the customers' premises. A well-organized corps of service dispatchers receives all trouble calls and dispatches the numerous small crews of from one to three men on customers' outages, service connections and minor cases of line trouble. Service dispatching offices are maintained in the principal headquarters throughout the territory served.

In the light and power department, the load dispatching office is responsible for the loading of trunk lines and stations, giving of clearances for men working on lines and the general direction of all trouble handling and location work on trunk lines and feeders. In this department there are also crew dispatching offices at various headquarters, dispatching the construction and maintenance crews on line work, underground work and substation work.

During normal conditions of operation, the usual cases of trouble are handled by the crews employed for this purpose, who are dispatched from the service dispatching offices. This organization constitutes the first line of defense. When the amount or character of the trouble exceeds that which the service crews can take care of, the maintenance and construction crews are called from their work and sent out on trouble by their dispatchers and constitute the second line of defense. Availability lists are kept in dispatching offices of servicemen, construction and maintenance men subject to call at nights and on holidays. These men rotate so that the availability does not become a burden.

With the present reduction in personnel of the regular crews, there are times during storms or general system trouble when the first and second lines of defense are not adequate to complete service restoration in a reasonable time. To meet this situation a third line of defense has been developed which is called the emergency reserve corps. The accompanying chart shows the organization of this corps as it functions during severe emergencies.

The load dispatching office assumes responsibility for general direction and works through the service dispatchers and the crew dispatchers so as to coordinate their efforts and obtain the best efficiency. A reserve squad of load dispatchers, made up of men who

formerly have seen service on this work, augments the force in this office, and similar squads increase the forces in other dispatching offices. A transportation squad of men from the garage force supplies additional truck drivers and mans the garage if the trouble is after normal working hours, so that equipment breakdowns can be handled promptly. A supply squad mans the storerooms so that materials can be issued as needed. A squad concentrates on keeping private telephone lines and communication channels in operation, and another squad brings in additional telephone girls to handle the large volume of calls coming through telephone switchboards from customers and employees.

Many cases of line trouble are reported by outside parties who are unable to give sufficient information, and a crew may be sent to the job which is too large or too small or insufficiently equipped. A squad of field observers, composed principally of distribution engineers, equipped with automobile transportation, is able to save crew time materially by going first to any case reported and telephoning in the exact nature of the trouble, so that the proper crew with the right material can be sent to handle the work with a minimum loss of time. Sometimes one of these squads can pick up a lineman from the nearest point and clear up the trouble without it being necessary to send a complete crew.

The regular servicemen ordinarily handling inside trouble are also linemen, and are diverted to clearing up outside lines, while emergency squads of meter men and inspectors are diverted to replace them in handling inside trouble calls. Office employees with knowledge of the system are able to do good service on the field observation squads and also perform miscellaneous functions, such as carrying food out to crews working long hours, transporting men and material from place to place, etc. Men normally employed as relief operators for stations are drafted into service for maintenance work when the trouble involves substation equipment, or are used to man automatic stations when needed.

Another field of usefulness for this corps is during trouble late at night or on holidays, when the number of regular servicemen on duty is greatly reduced. It sometimes happens that there is immediate need for a man who can throw a switch or perform some simple function when the nearest man on duty is busy at a location quite remote, and the dispatcher is faced with a delay of an hour or more. A list of suitable men among the emergency squads and construction crews is kept and their residence location and telephone number spotted on a map. Sometimes the dispatcher can call a man out from the reserve squads and get quicker action, if such a man lives close by.

This company maintains a submarine cableship equipped with storage tanks, a cable winding machine, etc., for handling the numerous submarine cable installations, many of which are in deep water and of considerable length. A large squad of experienced men is necessary to man the ship, but the need is infrequent. These men normally are employed at other tasks, but the squad is carefully organized beforehand and the procedure set up so that, when sailing orders are issued in an emergency, everything goes ahead without delay.

The organization of the Emergency Reserve Corps has been in effect for two years and has given excellent service. The secret of its effectiveness is its comprehensive organization beforehand, so that each man knows exactly where he is to report and what his duties are when the emergency call comes through. The various dispatching offices must be lined up to coordinate their work, so as to prevent duplication and loss of time in getting the proper men and equipment to the right place.

The load dispatchers must keep in touch with weather conditions at outlying points on the system. On several occasions where such information indicated a severe wind storm was approaching the territory, reserve squads were called out in advance and when the storm broke all forces were mobilized and excellent results were obtained.

Under present conditions of reduced personnel, the use of overtime, together with the calling out of second and third lines of defense as outlined, increases the available manpower many times over, and it has proved of inestimable value. The various members of the organization respond in a loyal way to these emergency calls, and like to feel that they are depended upon as an important link in the set-up for rendering the best possible kind of service to the public.

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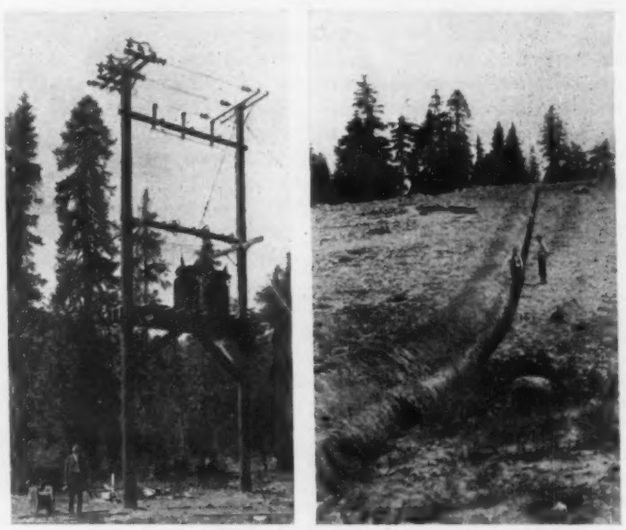
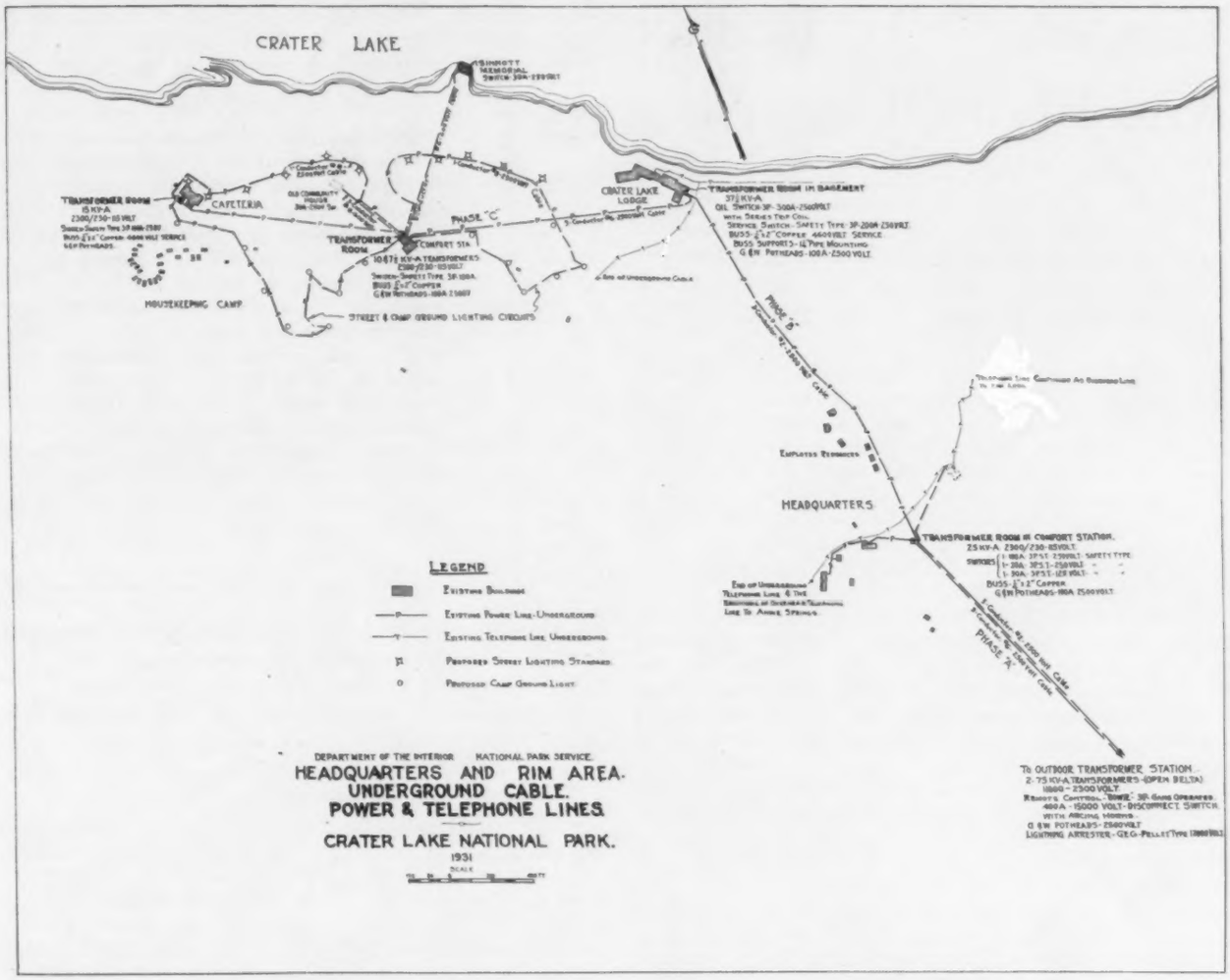
Buried System Preserves Beauty of Famous Resort

National Park Service Designs and Installs Low-Cost Underground Power Supply for Crater Lake Resort. Trench-Laid Cable Permits Economy

PRESERVATION of scenic values and retention of the natural aspects of the landscape dictated the use of an underground distribution system for Crater Lake Lodge and surrounding camp grounds, when central station service was brought to Crater Lake National Park in the summer of 1931. As the Lodge is located on the rim of the crater at an elevation of 7,100 ft. in a setting of magnificent natural beauty, every effort was made to make the electrical installation as inconspicuous as possible.



Left—Substation located a mile from Crater Lake Lodge Underground circuits take off from this point
Right—Trench prepared to receive the 2,300-volt cable which is installed directly in the earth without ducts or protection, except a warning board located 1 ft. from the surface



Layout of Crater Lake buried underground system, showing location of distribution centers and the extent of the buried underground cable

Service was taken from the system of The California Oregon Power Co. at 11,000 volts and was carried to the park for a distance of 8 mi., to a point approximately 1 mile from the Lodge, where the underground distribution begins. The transmission right-of-way for the overhead line is through a heavily-forested country, but is located out of sight of the road with its poles painted with carbolinium above the ground to cause them to blend as much as possible with the foliage.

Because of the high altitude and the location of this project, the transmission line is subject to severe winter snow and ice conditions, necessitating the use of heavier construction than would be necessary in lower altitudes. Construction features include the use of 54-in. angle-iron cross-arms with steel braces, structures being storm-guyed every ½ mile with four ¼-in. Siemens-Martin guys and Kearney 7-in. screw anchors. Conductors are No. 4, medium hard-drawn copper, spaced 12 ft. horizontally and sagged 45 ft. on the outside wires and 35 ft. on the inside wire. One long span of 1,200 ft. across Annie Creek Canyon is constructed of 7/16-in. extra high-strength steel conductors, deadended to 3-pole wood towers at either end of the crossing span. The over-head service terminates at an outdoor substation mounted 18 ft. above the ground, so as to be above the deepest snow. This substation consists of two 75-kva., 11,000/2,300-volt transformers, a gang-operated 3-pole disconnecting switch and appropriate lightning protection.

From this point the 2,300-volt, 3-phase distribution is run in non-metallic, 3-conductor, No. 2., 2,500-volt cable to various distribution centers located in the park area. This cable was trenched in the ground together with a No. 8 single conductor cable of the same type for series street lighting circuits around the camp grounds. Trenches were 2 ft. deep and 18 in. wide, and were backfilled to within 1 ft. of the surface, where a warning board of ½x8-in. common cedar was placed before the final filling was completed. The labor cost of trenching, laying and back-filling the 17,000 ft. of underground cable was 12.7c. per foot. Total material and labor costs for the 3-conductor No. 2 cable was $1,902.80 per mile.

Four main distribution centers are provided on the underground system, each consisting of a transformer room located in the basement of one of the park buildings. At these points a single-phase, 2,300-volt—230/115-volt transformer feeds a small low-voltage bus from which services are run underground.

The electrification was designed and constructed under the direction of the Department of the Interior, National Park Service, with George F. Chathe consulting engineer, who worked with E. C. Solinsky, park superintendent, to make the installation as inconspicuous as possible. Central station service replaces seven gasoline-driven generators, formerly used at the Lodge and in the vicinity.

Campaign—To Reduce Kite Flying Hazards

Safety Activities in All Companies Should Include Educational and Preventive Measures to Decrease Annual Toll of Accidents and Injuries Through Carelessness and Ignorance of Dangers Attending This Popular Spring Recreation*

FROM the standpoint of the operating company, the kite flying season presents a problem which demands immediate attention and prompt, vigorous action, if serious consequences are to be avoided. A mounting toll of injuries, even death, to thoughtless children, damage to equipment, and service outages are the major penalties which await neglected opportunities to correct the hazards of this popular sport.

The breezy weather of February and March is a challenge to juvenile ingenuity to enter into what always has been a competitive recreation of the season—kite flying. Kites are constructed and flown with whatever materials are available, and it is only natural that the tinsel string salvaged from the preceding holdiay season should offer a logical accessory for this purpose. To the more advanced participant, the durability of metal construction of the kite itself and the strength of fine wire for flying are attractive inducements for the use of these materials. In recent years, certain establishments have fostered the use of these metal kites by giving them to children as an inducement for the parents to purchase at their establishments.

Because of the hazards involved, the use of metal for any purpose in the construction or flying of a kite is to be condemned most strongly.

The use of tinsel string or fine wire invites death or permanent injury to the child flying the kite if the wind carries the string into contact with a transmission line. The metal kite itself will cause a phase-to-phase or line-to-ground short circuit and may burn down the line, with the attendant hazard to persons in the vicinity; it may cause no small amount of damage to equipment and be responsible for an unnecessary service outage. Because its equipment is involved directly, the operating company can assume the sponsorship of remedial measures which will correct the foregoing conditions. The Accident Prevention Committee of the Pacific Coast Electrical Association has included the investigation of kite flying conditions and recommendations for their improvement as a part of the current year's activities.

Primarily, the problem is one of thoroughly educating the children and adults to appreciate the hazards found in the use of any metal whatsoever in the construction and flying of kites, and also to encourage kite flying in vicinities resonably remote from high voltage lines. Many mediums are available by which an educational campaign of this type can be carried out. Those found to be most effective by operating companies who have carried on this work in past years are included hereinafter as a part of this report.

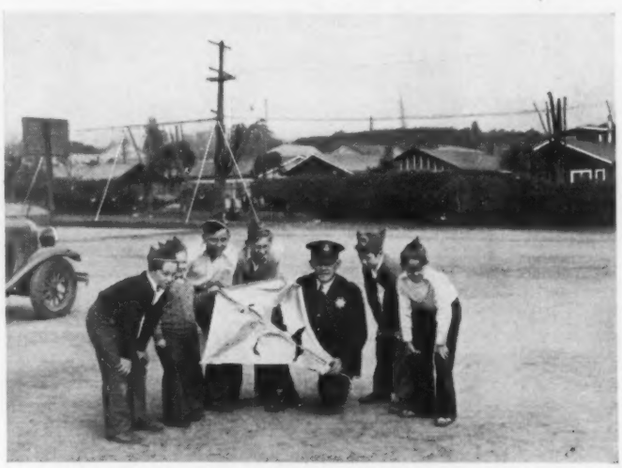
Probably the most effective means of education is through a corps of trained speakers to address interested organizations on kite flying practice. Organizations which may be included in such a speaking tour include:

1. Police force of the city,
2. Junior traffic organizations of high schools and grammar schools,
3. Student bodies of the schools,
4. Parent-Teachers associations.

In all cases, talks can be made more interesting by the use of actual exhibits of kites, tinsel string, magnet wire and other metal parts which have been removed from transmission lines. In addition, slides or motion pictures to illustrate the correct manufacture and proper localities for flying the kite add to the impressiveness of the presentation and arouse the interest of the children.

In addressing school student bodies, the cooperation of the police department is of great advantage. One operating company found that talks given by uniformed policemen strengthened the appeal to school children. This same company secured the loan of a specially-equipped radio broadcasting car which enables the speakers to go from school to school, addressing large groups of children with ease. The novelty of this car,

Officer of the Oakland Police Department describing correct kite construction to members of a school traffic organization



*Serial Report No. 1, P.C.E.A. Accident Prevention Committee, H. B. Wells, Chairman; C. B. Judson, chairman of sub-committee on Metal Kites and Radio Antennas.

P.C.E.A. Engineering Section Committee Reports

Following a new policy, committee reports of the Engineering Section, Pacific Coast Electrical Association, completed early in the year will be published in ELECTRICAL WEST immediately instead of being withheld until the May 15 issue as has been done in the past.

This report of the subcommitte on Metal Kites and Radio Antennas will *not be* published again as a part of the final report of the Accident Prevention Committee. Retain this report for your complete file of 1932-1933 P.C.E.A. activities.

coupled with the police uniforms, created an intense interest, which, to a large degree, was responsible for the success of the campaign. As school superintendents greatly appreciate the value of this type of education, their cooperation is available in the routing of talks and in assembling the student body of each school on short notice.

Letters, pamphlets and posters provide an inexpensive means of keeping the message before the school children, their parents and teachers during the kite flying season. Letters outlining the hazards of kite flying may be prepared and sent to each classroom teacher with an appeal that she read the warning to her pupils. At the same time a pamphlet on the proper construction of kites may be compiled and given to each child. Such pamphlets may include not only information on kite construction, but also warning against the hazards involved in kite flying.

Posters, similar to the one illustrated herewith, if placed on school bulletin boards, keep this safety activity in the minds of the children. Wherever possible it is advisable to secure the cooperation of school journals, both for the faculty and for the children, to insure further dissemination of the safety message.

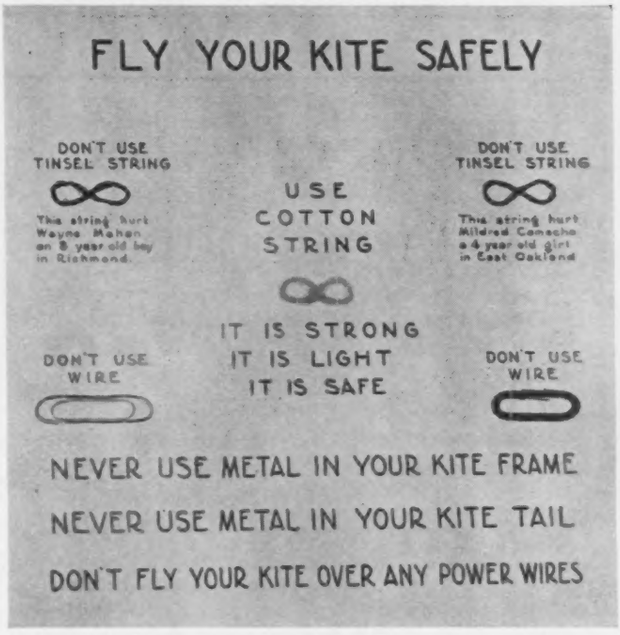
Poster prepared by Los Angeles Department of Water and Power to warn children of the hazards of kite flying. Similar posters, placed on school bulletin boards, keep the safety message before the eyes of the kite flying participants

Municipal playground and recreation departments are generally found to be closely allied with the traffic and safety committee of the city. At the initiation of the operating company, the playground department may cooperate with kite flying contests at which the safety features of kite flying can be included as a part of the day's program. Education carried on in this manner has proved to be a complete successs and has been one of the most effective means in reducing accidents.

With reference to the activity of the operating company itself, one utility reports the fomation of a kite flying patrol which consists of experienced linemen, one assigned to each section of the city. Six men, selected for their ability and resourcefulness, were kept on the patrol during the entire last kite flying season, during which time they removed a total of 2,208 kites from all lines, or an average of 48 kites per day. These were classified as follows:

Kites removed from transmission lines (100 and 60 kv.) = 0.3%
Kites removed from distribution and tie lines (12 kv.) = 19.7%
Kites removed from distribution (4 kv. and 2,300 volt) = 50.0%
Kites removed from secondary lines.....= 30.0%

In addition to removing kites from wires, these men were constantly patroling the territory and waching for kites which might get into trouble, but no attempt was made to prevent kite flying. Vacant lots remote from high voltage primaries were spotted by the men; to these children were directed for flying their kites. They soon gained the confidence of the children, who often sought their assistance as well as heeded their advice. Their work proved to be particularly effective and indispensible to the small boy whose lack of judgment repeatedly confronted him with danger. This was true also of foreigners who did not get the message at schools and who received no word of caution from their parents, most of whom knew less of the danger than their children. As an additional duty, the patrolmen made a thorough inspection of all lines and reported many cases of rusty guy wires, broken insulators and other line irregularities which needed attention.


FLY YOUR KITE SAFELY
DON'T USE TINSEL STRING
This string hurt Wayne Mahan an 8 year old boy in Richmond.
USE COTTON STRING
DON'T USE TINSEL STRING
This string hurt Mildred Camacho a 4 year old girl in East Oakland
IT IS STRONG
IT IS LIGHT
IT IS SAFE
DON'T USE WIRE
DON'T USE WIRE
NEVER USE METAL IN YOUR KITE FRAME
NEVER USE METAL IN YOUR KITE TAIL
DON'T FLY YOUR KITE OVER ANY POWER WIRES

Banner used in the safety talk to the school study body

Human life cannot be measured in dollars and cents, but the reduction in damage and outages which can be attributed directly to kite flying safety campaigns is a measure of the reduction of hazards to the children who participate in this sport. The experience of one operating company is typical of what can be expected from a comprehensive safety campaign: In 1931 there was a total of eleven burn-downs from kites becoming entangled with the line. In 1932 there were eight, only two of which occurred after the safety drive had started. In that year, the effectiveness of the safety campaign was particularly apparent in that less than one per cent of the 2,200 kites removed from the line were constructed of wire or flown with tinsel string. In 1931 a burn down occurred for every 60 kites removed from the line, while in 1932 the rate was one burn down for every 276 kites removed from the line. This fact alone indicates that the educational campaign is a most important medium of minimizing the danger to human life.

Such campaigns must be carried on each year to educate the children of the schools and to refresh the minds of the parents on the hazard of this sport. The National Electric Light Association has issued pamphlets on this subject which are available to all operating companies and from which campaigns may be planned and executed by the utilities. Participation in this safety activity is most desirable and necessary if kite flying hazards are to be minimized.

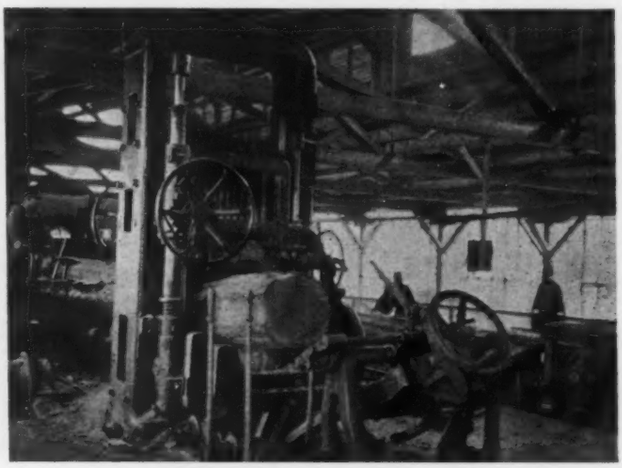
Mill Operates on Full-Time Schedule

Designed to Meet Current Lumber Prices, the New Mill of the Seaboard Lumber Co. Solves Production Problems with High-Speed Scandanavian Gang-Saw Equipment and a Modern Electrical Installation

WITH authorities in unanimous agreement that the lumber market suffers from over-production, it takes courage, foresight and a sure knowledge of the business to plan, install and operate a sawmill at full capacity. To say that such a mill would return a small but steady margin of profit under such conditions seemingly tempts the credulity of any reader, yet that is exactly the situation at the Seaboard Lumber Co., Seattle, Wash. Completed in the midst of a severe depression in the lumber industry, this mill qualifies the above reason for the industry's ills to the extent that the market suffers from over-production by either obsolete or uneconomical mills.

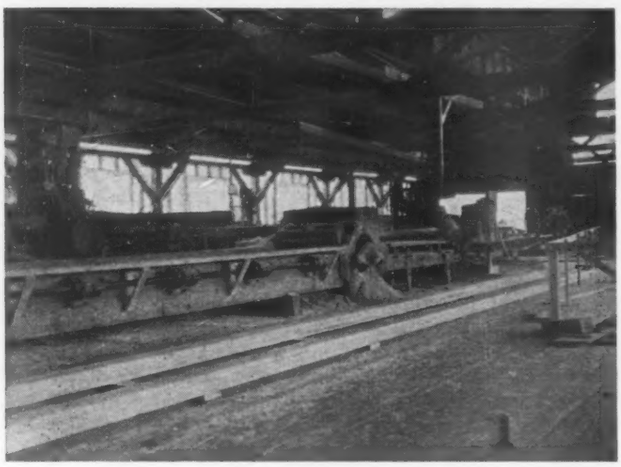
Of interest is the manner in which the manufacturing processes have been worked out to produce maximum lumber with minimum waste and at a low cost per unit. Designed to handle small logs, not over 30-in. in diameter, the Seaboard mill has two high-speed, Scandanavian gang-saw equipments which are the heart of the production schedule. It is essential to sort logs to diameter to secure maximum lumber. Briefly, carefully graded logs enter the mill on two automatic log hauls, one for logs up to 30 in. and the other for logs below 26 in. in diameter. These hauls are stopped automatically by the incoming log, which itself opens a limit switch as it reaches the proper position for loading on the infeed carriage to the gang saw. Logs are kicked from the log haul onto the carriage by means of an electric "nigger," thus releasing the limit switch, which starts the haul again and brings the next log into position.

Carriages of each gang equipment differ from the conventional sawmill type, in reality being two independent trucks running on the same track leading to the saw. The infeed carriage and the supporting carriage operate independently of each other and can be adjusted for each length of log. Upon being rolled from the log haul, the head of the log falls upon the supporting carriage and the butt on the infeed carriage, the latter being so arranged that one man can handle the heaviest logs. The log is clamped securely by means of a yoke arranged so that the log may be rotated easily after being clamped, so as to obtain the best cutting position. A power feed carries the infeed truck toward the saw and automatic guides prevent turning or twisting while the log is being sawed. When the infeed carriage comes within a predetermined distance of the saw, the clamps automatically release and the carriages return to their original position for the next log.

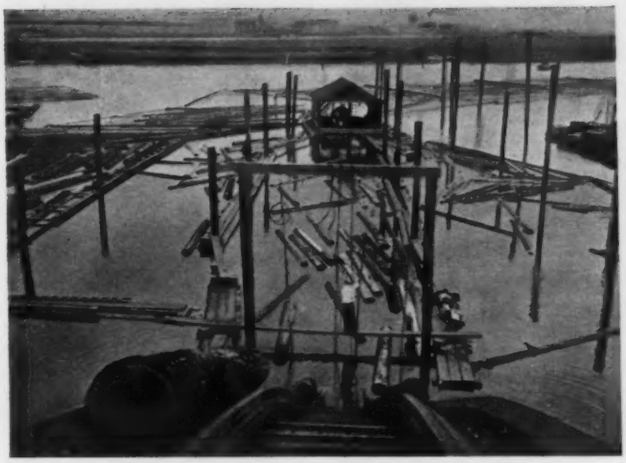


A high-speed Scandanavian gang-saw at work in the mill. In one trip through this saw, a log is reduced to a number of cants whose thickness depends upon the saw spacing. Minimum trimming and waste can be obtained by spacing the saw blades to accommodate the average diameter of the logs. In the foreground is the outfeed carriage ready to clamp the cut end of the log until it has passed through the saw

General view of the main mill showing two head mill equipments and, in the foreground, one of the edgers. Typical of the mill is the absence of all overhead shafts and belts, as each unit is driven by an individual motor. Remote control saves labor and power costs, making energy consumption per unit output much lower than in the average mill



The gang saw itself consists of a heavy main frame in which a yoke travels up and down vertically. The yoke is driven by means of a connecting rod and crank shaft belt from a 100-hp. motor. Provision is made in the yoke for mounting from one to ten saw blades, so spaced as to get the maximum amount of lumber with minimum waste from the size of logs then running through the mill. One passage through the gang saw reduced the log to a number of cants for planks whose thickness dedends upon the spacing of the saw blades. As the head of the log emerges through the saws, the outfeed carriage mechanism, similar to that of the infeed carriage, clamps the boards firmly together and moves out until the log is completely through the saw. Then the clamps are released and the carriage platform tilted



Sorting pond and double log hauls which operate automatically to keep a log always in readiness to be fed into the head saws. An electrically operated bucking saw is housed on the float

so that the lumber slips off onto the transfer chains leading to the edger feed. After passing through the edger, lumber is carried on live rolls to the trimmer feed chains.

An interesting feature of this mill is the fact that lumber from the two head saw equipments is taken care of with one trimmer, which also acts as a slasher for refuse from the original cuts. Good lumber passes from the trimmer onto live rolls spaced so that slashed refuse will fall between the rolls into the refuse conveyor. Lumber then passes to the sorting chains, where a certain portion is selected for planing and seasoning, the remainder being stacked for shipment green.

Completely electrified, this mill also exemplifies the successful application of the unit drive. Power line shafts are not used, each machine being driven by an individual motor. Thirty electrical units, comprising a connected load of over 800 hp., are necessary for the operations. With the exception of the main gang-saw motors, all motors are remotely controlled with magnetic switches; this accounts for much of the saving in labor which has been accomplished. Instead of going into details of the motor and control installation, it is sufficient to state that the installation embodies all the requirements or a reliable system consistent with low cost operation.

Of particular interest are general figures on the mill operation. This mill cuts an average of 80,000 bd. ft. per 8-hr. shift with a crew of 30 men. This is an average of 3,000 bd. ft. per man per day, as compared with 1,500 or 2,000 per man-day in the average mill. With the equipment and arrangement there, it is possible to handle one log per minute, making a total of 480 logs per day through the mill. Under normal conditions 1,000 bd. ft. are turned out every 5.4 min., which compares very favorably with the U. S. Forest Service figures of 9.4 min. per 1,000 bd. ft. in the average mill, handling logs of the same size.

Power consumption (power is purchased from a central station) equals 33 kw.-hr. per 1,000 bd. ft. output, much lower than the average figure of 70 kw.-hr. per 1,000 bd. ft. This is due in a large part to more efficient equipment and to the individual unit drive whereby a machine and driving motor are under immediate control of the operator and the motor does not carry the dead load of long shafts or idle equipment.

Waste has been reduced to a minimum, but what refuse accumulates is utilized fully. Important advantages of the gang-saw equipment are the actual saw cut, which is only ⅛ in., much smaller than that of the band or circular saws; the amount to be trimmed from the outside of the cants can be made small by proper saw spacing (placing the saws close together near the outside of the log); and a total saving in lumber of at least 10 per cent is possible over other methods of sawing. Sawdust is collected and sold to owners of sawdust burner furnaces in their homes. Other refuse which will not serve as block firewood is hogged and the resulting fuel sold to other plants, while the slashings of requisite dimensions are sawed up and sold f.o.b. plant to fuel yards. All of the log is utilized in some manner.

Principles applied in the design of this mill and the economic methods obtained therefrom take advantage of the most modern equipment together with the flexibility and power savings possible with individual motor drives. While mill performance shows up particularly well in this instance, essentially the same considerations are involved in all modernization programs.

The installation was engineered by Carl S. Sundbom, of the Mill Engineering and Supply Co., Seattle, which also furnished the Scandanavian gang equipments. The Prescott Co., Seattle, furnished the edgers, conveyors, trimmer and planer, the entire electrical installation being furnished by Westinghouse Electric & Mfg. Co.

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Provides Flexibility in Switch Mounting

A NOVEL method of mounting industrial switches and controls to provide for utmost flexibility in making changes to suit the growing requirements of a factory was adopted at the Los Angeles Can Co. plant. A channel-iron frame was made and on it was placed the disconnecting switch and the starter, assembled uniformly with pipe nipple and pushbutton control. These then were strapped to the columns of the buildings, adjacent to the motor involved. It is easy to remove one of these starter units without disturbing the others, or to add a new one. The assembly is fed from individual conduits which come in overhead and run down to the switch. From the starter control, motor leads are carried either up to the ceiling or down to the floor, depending upon the location of the motor.

A Department for the Industrial Electrical Contractor — the Motor Specialist

MOTOR FORUM

An Exchange of Ideas on Economic Electrical, Mechanical and Business Problems

Motor Agreement Consummated

Sets Territorial Limits, Assigns Class of Customers, Gives Selling and Advertising Assistance to Franchised Representatives

OUTGROWTH of some three years of development and negotiation in which it has sought to arrive at more just and equitable an arrangement between its industrial dealers and itself, the Westinghouse Electric & Manufacturing Co. recently has consummated a new motor-dealer franchise with certain contractor-dealers which is felt to answer many of the contentions that the Motor Section of the Electragists have held as to previous motor distribution policies sponsored by manufacturers. It commits the manufacturer to certain definite policies while demanding of the enfranchised contractor-dealer a definite commitment on others.

Essentially, the agreement is a franchise granted to the selected dealer, revokable upon failure to comply with its conditions. This franchise becomes essentially worth while seeking and keeping because of the definite commitments of the manufacturer in the sale of the listed items, which may include motors, control, industrial and building switchboards, safety switches, industrial lighting equipment and some other lines of particular interest to concerns engaged in industrial electrical contracting.

Dealer Conditions

Dealers receiving this franchise agree upon three specific points: (1) The exploitation of Westinghouse products to the exclusion of competitive products of the same type; (2) respect for and in general living up to the standards and ideals of the Westinghouse Co.,; (3) to give adequate care to the class of customers definitely assigned to the dealer. In case of failure to comply with any of these, the company may select another dealer to do so.

Manufacturer Conditions

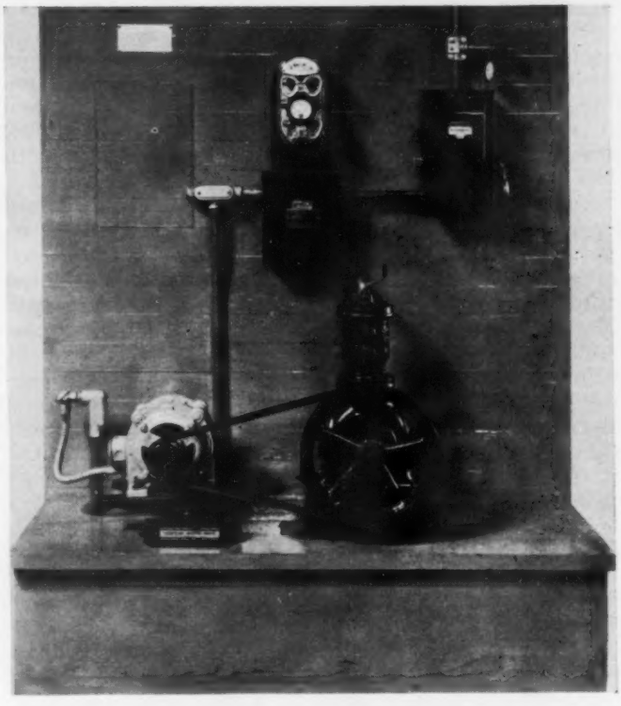
On the other hand, the Westinghouse company commits itself in the following respects: (1) A definite scale of discounts to the franchise holder; (2) assignment to the dealer of a specific territory whose boundaries are established upon a recent survey of the market potential; (3) assignment of certain general classes of customers, and specifically, a list of customers in that territory to be served by the dealer; (4) in his territory and for those customers assigned him, the company will not compete with the dealer. (If any inquiries come in, these will be turned over to the dealer to be followed up. The dealer must sell the job himself, however. He will be given engineering assistance if needed.); (5) the company will not set up any competing dealer in the assigned territory unless with the consent of the franchise holder; (6) in his assigned territory the company will support the dealer against outside or other territorial dealers. (If the dealer steps out of his territory to seek a contract, he must expect the company's assistance and support to be given to the dealer assigned that other territory.); (7) preparation of advertising material and campaigns for the dealer, also to work out educational meetings to acquaint dealer's salesmen with the company's products and their selling points.

Reduce Number of Dealers

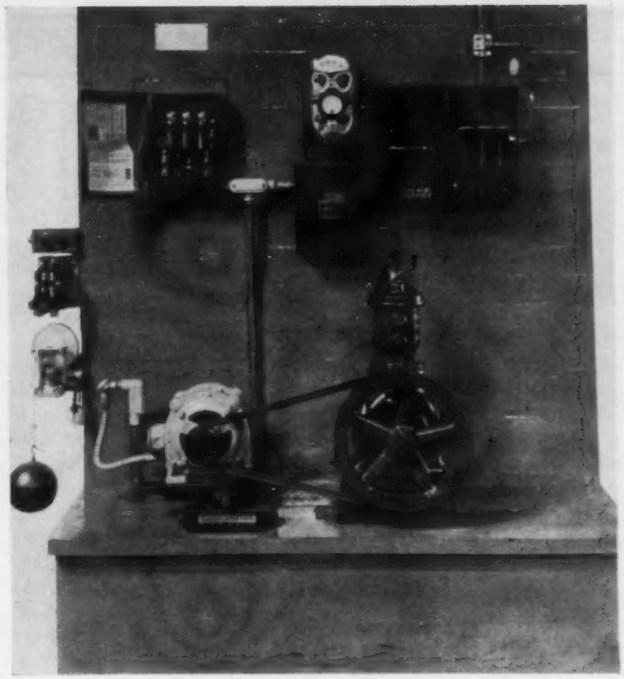
In preparation for just such a program, the Westinghouse company's Pacific Division has been reducing its number of dealer outlets during the past two years. It has been felt by the executives of the division that a more careful selection of dealers, and once selected, more consistent assistance and strengthening of such dealers, would improve its motor and industrial business. This has proved to be a fact. Despite business conditions the company's business through dealers has increased, even though the number of dealers has been reduced on the Pacific Coast to about one-third of what it was two years ago.

Disappearing Switches That Sell a Quality Job

THEORY has a poor chance these days against the mania for cheapness, but a visual demonstration of the soundness of that theory brings back sanity and a valuation of quality in an electrical installation, the



Demonstration layout showing minimum installation



When trap door is sprung a magnetic switch is cut into the line, and remote starting devices are swung around from the edge of the board

California Electric Works of San Diego has found. "You can talk yourself blue in the face," says V. R. Knight, "but a little concrete example hardly needs to say a word."

To demonstrate many things, chiefly that a minimum job as required by the code in a motor installation is not a guarantee against burning up the motor before fuses blow, and that a magnetic-switch may more than pay for itself, an ingenious display was arranged by that company and is bringing sales results.

Briefly, the outfit consists of a board on which is mounted a service pipe, with grounding clamp, a 30-amp., externally-operated switch with 15-amp. cartridge fuses, connected to a meter test cutout box and meter, to which has been added a 10-amp. ammeter, and thence to a 4-pole, 3-phase, 1-hp. motor mounted on a floating base, driving an air compressor through two V-belts. Connection at the motor is made with a drip loop effect coming up through the floor to show an installation which will prevent moisture coming down the flexible shaft to the motor.

By means of a valve on the top of the compressor, the pressure can be increased to load the motor from idle to stall. Operation requires a 10-amp. starting current and a 3-amp. running current, for which the normal fusing is 15 amp. By increasing the pressure to a stall, the running current is increased to 9½ amp. By single-phasing, the current drawn is 7½ amp. Neither is sufficient to blow the fuses, and yet the motor gets hot and if continued to operate under such conditions would burn out. This the skepical prospect can very easily see.

By swinging a trap door at the back (on the rear of which is a double-throw switch cutting a magnetic switch into the line), and by swinging around from the side of the board either a push button, a pressure switch or a float switch (which can be plugged in at the rear) the customer can be shown how effectively the magnetic switch protects the motor under either the overload or the single-phase situation. It always helps to sell the quality installation.

Smudging Without Smoke

WITH oil smudging taboo in many fruit growing sections of the West, smokeless, sootless electricity now has the job of protecting orchards from frost. The Aladdin orchard protector, manufactured by Samuel V. Wight, Inc., Los Angeles, operates on the principle that so long as the air is moving, no frost can settle on the trees and fruit even though the temperature be below freezing. This device utilizes a 100-hp. ball-bearing motor which operates an adjustable metal airplane propeller on a revolving base. This forces a movement of air and protects the trees in a circle of 10-acre diameter. The steel tube which supports the motor end of the propeller is rotated one revolution in 5 min. by a ¼-hp. motor. On the midway platform, beside this motor, are a 100-kw. transformer and the switch and meter house. This orchard protector is 45 ft. high to the top of the propeller housing and 12 ft. wide at the base. The bottom diagonals may be taken off so that a tractor may be driven underneath for ground cultivation.

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REHABILITATION POSSIBILITY—A device which writes a log of machine operations, operated by a synchronous electric clock, and started by the operator by means of a key when he starts in the morning, is now available for individual machine application in what is called the "Chronolog," developed by the National Acme Co. of Cleveland and distributed through Graybar. The machine records machine idle time, accumulated idle time, total pieces produced, amount of time consumed by inspection, or any other desired time information. The printing intervals can be set for 5, 10, 15, or 30 minute intervals. By means of a telephone dial, and key letters, the operator can dial the beginning of each operation in his particular production schedule, recording the time consumed.

There's a Trick to Window Displays

It Is Difficult to Get Prospects Inside the Store So the Clerks Can Make the Sale, But the Most Blasé Window Shopper Will Stop If There Are Mysterious Goings-on

IN NEW YORK CITY, a short while ago, a small drugstore placed in its window a trick device—the ever-flowing faucet sending a stream of water into a never-filling bowl. The trick is simple and old, but New Yorkers crowded around the window in such numbers that traffic was blocked and the police had to order the druggist to take the trick out of his window.

If the old faucet trick could halt blasè citizens of the nation's largest city, what would a new trick do for the traffic problem? And what drawing power would such a device have upon citizens of smaller towns, who probably never have been set upon by the premier tricksters of the age? With this thought, the editors of ELECTRICAL WEST propose to devote time and space each month to the description of a few simple, inexpensive window devices which have proved their worth in drawing power.

If a dealer would change window tricks regularly —say, once every two or four weeks—his customers would stop habitually at least once during that period, which is more than some now do, to attempt to solve the latest mystery. If they didn't solve it the first time, they would stop as often as possible in order to learn the solution; if they did solve it, they would bring their friends so they could satisfy their ego by explaining how the trick was accomplished. In either case, the displays in the window get a lot of attention.

E. A. Portal, in charge of the radio department of the Chas. Brown & Sons stores, in San Francisco, has followed this policy for years, because he knows it works. He first started installing trick windows in his own store, years ago; it has become so much fun for him that he still thinks up mystery devices and directs their installation in the Brown windows.

Some of his simplest ideas have been the most successful. For instance, he has built many tricks around an ordinary vacuum cleaner. The three variations of the "bouncing ball" trick, as shown in Fig. 1, are used again and again, but never fail to attract large crowds of San Francisco fans. The construction is easy:

Under a large box (that is, one just sufficient to do the job) a vacuum cleaner is placed, handle and bag removed. The hose attachment is reversed so that air is expelled rather than drawn in through the hose. A small metal pipe is inserted in the end of the hose and the pipe run through a hole in the top of the box. The box now is covered with velvet, bunting or a throw. An old radio cabinet (something else can be substituted just as well) then is placed on the box and the pipe continued through the cabinet as shown. A celluloid ball, similar to a ping-pong ball but larger if possible, then is placed in the air stream, which forms a cup to hold the ball suspended above the cabinet. It will be necessary, in most cases, to insert a couple or three lamps in series with the vacuum cleaner so that the air flow is reduced enough to bring the ball down from the top of the window.

If more elaborateness is wanted, into the sides of the ball stick three matches or tooth picks. On the ends of these afix, by pasting or by slitting the match, pieces of paper to make the airplane effect. Now the ball will do tailspins, loops, side slips and all sorts of twists.

Or stick just one match into the ball and on this fasten a piece of paper shaped like a chicken's head. A

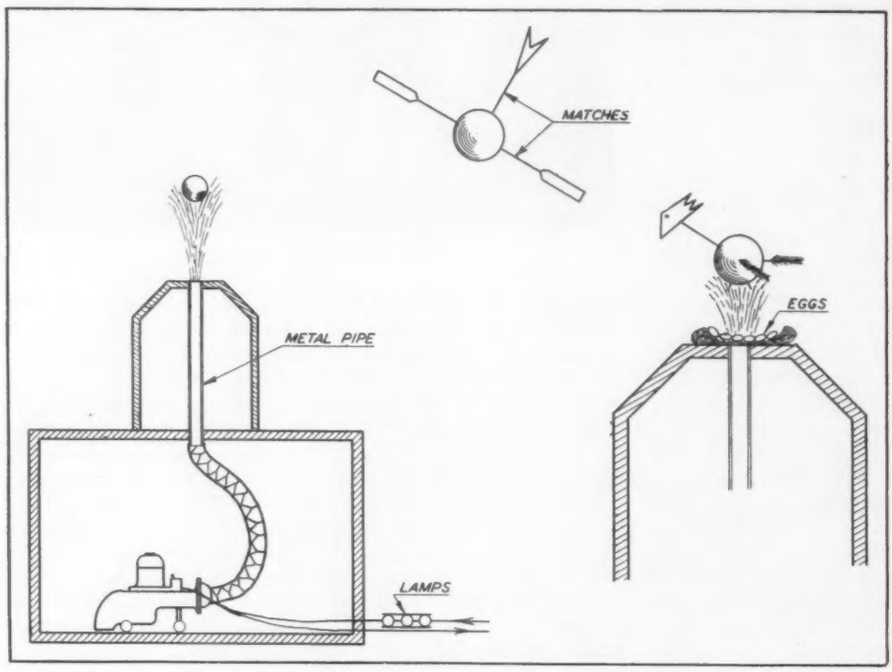

Fig. 1—Three variations of the "bouncing ball" trick, accomplished with a vacuum cleaner and a celluloid ball

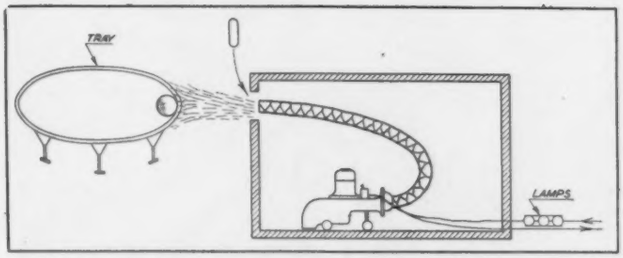

Fig. 2—Another vacuum cleaner trick, with the celluloid ball rolling around the tray without apparent reason

couple of feathers can be inserted for a tail and wings, with short toothpicks for legs. Now, around the hole in the top of the radio cabinet place a nest of eggs; be certain not to obstruct the air flow. The hen still will do flying stunts to the amusement of the watchers.

Better still, place a trip in the vacuum cleaner circuit so that the air shuts off and on at intervals; now the hen will settle down to its nest when the air goes off, rising up again when the trip turns on the air. Al Jolson once called this the funniest window stunt he had seen.

When the appendages are placed on the ball, it may be necessary occasionally to watch the ball to see that it doesn't fall out of the air path in its gyrations. But the extra attention given is worth the extra attention the trick gets.

Another vacuum cleaner trick uses the same box, but with a jet in the side as shown in Fig. 2. Have the air flowing slightly upward toward a tray mounted on glasses. The tray should have a slight rim so that the ball will not roll off. When the air is turned on, the ball will roll around the tray with, it appears to the watchers, no help at all. The amount of air will have to be regulated so that the ball does not appreciably increase speed and jerk when it enters the air path. Be certain also, in tricks such as this, to have the tray mounted on glass so that those watching can see that no wires or other aids lead to the tray.

That's enough for this month. There is practically no expense involved in these vacuum cleaner tricks. The celluloid ball costs only a few cents and it can be used over and over again.

Try one of these devices; install one this month to get the after-Christmas shoppers. If it doesn't increase the number of people who crowd around your windows, then the psychologists must answer. But if it does, then it is up to you to see that the window is filled with attractive appliances and necessities so that the people who come to see will enter to buy.

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Take the Product To the Prospect

ROLLING KITCHENS—not the type familiar to doughboys, but modern prototypes complete to the last detail—are taking the message of the convenience and variety of electrical appliances to housewives throughout California. L. H. Bennett Co., Ltd., San Francisco; George Belsey Co. Ltd., Los Angeles; and George T. Bauder Co., San Diego, distributors of General Electric kitchen appliances, each have purchased motorized traveling kitchens of the type designed by the General Electric Kitchen Institute.

The "Dream Kitchen," as the Bennett traveling display has been designated, is equipped with all modern electric labor-saving devices, such as refrigerator, range, water heater, electric sink, food mixer, built-in radio, ventilating fan, washer, ironer, vacuum cleaner and table appliances. Cabinets have been scientifically designed. There is a built-in desk for the housewife. The sink is metal. Lighting fixtures of the most modern type were specially designed. And the whole display is wired and piped for connection to power lines and water supply.

The plan of operation of the traveling kitchens contemplates routing them throughout the territory served by the distributor, making them available to the General Electric kitchen appliance dealers and to the utility sales organizations for demonstrations in each community. Initially the dealers will be charged a nominal per diem rental charge so that full use of the display will be made on the first trips throughout the territory.

The display trucks solve one problem in heavy duty electrical appliance sales: It now is possible to take the product to the prospect. Thus the work of the canvassers and salesmen of the dealers can be supported and, instead of endeavoring to bring the housewife into

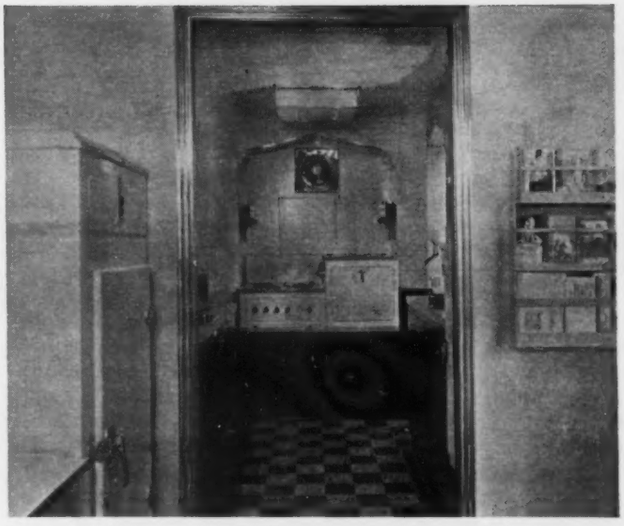
"The Dream Kitchen," mobile electric kitchen display of the type designed for the General Electric Kitchen Institute, being operated in northern California by the L. H. Bennett Co., Ltd., of San Francisco, G.E. kitchen appliance distributors

the store to see a display of ranges or refrigerators, the display can be brought to her very door.

In rural communities the visit of the truck will be preceded with newspaper advertising, and in many cases, by direct mail promotion to actual prospective purchasers. The Bennett company has worked out its own promotional program which centers around an attractive broadside entitled "Your Dream Kitchen."

In metropolitan areas the Belsey organization plans to try out a system of mass canvassing of definite areas the day before the display is to visit that particular district. Admission cards will be left with the housewife, and admission will be by card only. Incidentally, the housewife is requested to check the appliances she now owns on a list printed on the card. The salesmen will advise her of the exact time the display will be in her block the following day.

In Los Angeles, George Belsey has inaugurated an educational program in connection with domestic science classes of the various high schools and colleges. The organization makes a special attempt to afford young high school girls, who will be the housekeepers of tomorrow, an opportunity to inspect the car. The outcome has been that, not only are these impressionables educated in electric home helps, but they have sent their mothers flocking to visit the kitchen on wheels.



The most up-to-date kitchen in California can be taken to any housewife's door for display. Every conceivable electrcial kitchen appliance is installed, from range, dishwasher and refrigerator to built-in radio, ventilatng fan and clock. F. Eugene Barton, San Francisco architect, designed the interior. The scientific arrangement of cabinets was worked out by the Peerless Fixture Co. of Berkeley

Interior of the Bennett display truck, looking from the kitchen into second room, where laundry equipment and small appliances are displayed. Note the modern lighting fixtures, the bracket over the window and the opaque glass center fixture

In routing the coach through the territory, salesmen from the Belsey company schedule appointments with interested prospects in the town during the morning hours and, while the car is in a particular neighborhood, the surrounding homes are canvassed. During the afternoon the kitchen is parked in front of the local dealer's store where previously-invited prospects and passers-by may view the display.

Selling theme to be employed will be "You don't have to wait for a complete electric kitchen—start with a range or refrigerator."

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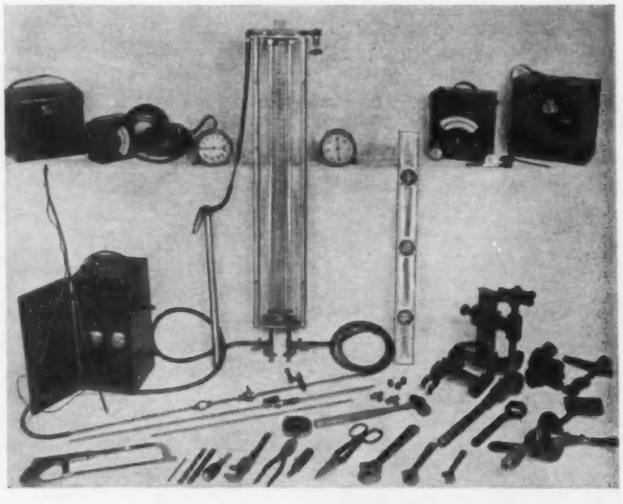
Pump Testing as Load Insurance

ONE of the most vulnerable prospects for an engine salesman is the electric pumping plant power user whose pump has become inefficient, and whose power bills, in consequence, reflect disproportionate cost of water. In attempting to overcome this situation, as well as to closely contact its customers for further electric sales, The Southern Sierras Power Co. early in 1930 established a pump testing service.

With the experiences of Southern California Edison Co. and San Joaquin Light & Power Corp. as a background, the Southern Sierras company has been able to develop an excellent service of this character.

Fundamentals of the service are a good mechanic, who has also the ability to contact farmers, and the



All the equipment needed for a pump testing service is shown here: chiefly ampere, volt and flow meters, a well sounder and pressure gages

PUMPING PLANT TEST
THE SOUTHERN SIERRAS POWER COMPANY
FORM 933-5-32-200

Name ..... District ..... Date .....
Land Location ..... Trans. Loc. .....
Motor ..... H. P. ..... Amps. ..... R R P M. ..... M R P M.
Frame No. ..... Form ..... Cycles ..... Type ..... Serial No. .....
Meter ..... Amp. ..... Volts ..... No. ..... K .....
Disk-K ..... Rev ..... Sec. ..... K. W. Input ..... H. P. Input .....
Line Voltage, No Load—Side 1 & 2 ..... Side 1 & 3 ..... Side 2 & 3 .....
Volts, Under Load—Side 1 ..... Side 2 ..... Side 3 .....
Amperes—Side 1 ..... Side 2 ..... Side 3 .....
Pump ..... Type ..... Size ..... No. .....
Setting ..... No. of Stages ..... Ft. of Suction ..... Size of Column .....
Well—Depth ..... Diam. ..... Open Bottom—Perforated .....
Dia. Motor Pulley ..... Dia. Pump Pulley ..... P R P M. .....
Standing Level ..... Pumping Level ..... Pressure Head ..... Total Head .....
Theoretical H. P. ..... I. D. Discharge ..... Area ..... G. P. M. .....
Orifice or Weir ..... M. I. ..... Length of Air Line .....
Belt Eff. ..... Pr. Factor ..... Motor Eff. ..... Overall Eff. ..... Pump Eff. .....

Two forms are filled out. First, an application for a test is made by the customer and, second, a field data card is filled out on the job by the tester. On the reverse side of the data card, shown, are spaces for water measurement calculations and the results of the test

best available metering equipment. The man selected for this job is, in the final analysis, a power salesman who not only can test pumping plants, but who can follow up this test to satisfy the customer and close sales for electric farm equipment. The equipment, selected after a careful investigation, is shown in an accompanying illustration. Principally, it consists of a Collins flow meter, a well sounder, pressure gages and volt and ampere meters. The Collins flow meter has been tested from time to time against other types of water measurements, and found to be very accurate under the most difficult conditions. With the Collins impact tube, a survey of water velocities in the pipe may be taken on several cross sections so that mean velocities may be measured accurately .

The effect of this service has been better than was anticipated. Not only have the farmers felt that the power company was doing everything in its power to help them lower their water costs, but it has been a material help in holding them to the company's service in the face of strenuous engine competition. This equipment has also been a great help in swinging engine-driven plants over to electric service.

The total cost of this service, free to the farmers, has amounted to just about $10 per test; this cost also includes the time spent on promoting further electric service on the ranches.

Needless to say, the Southern Sierras company is more than sold on this service as a fortification against engine competition, as well as a constructive contact for further electric sales.

Letters to the Editor

Sales Hypocrisy

Editor, ELECTRICAL WEST:

An electrical man would highly criticise an automobile man who was endeavoring to sell him a car, and admitted he drove a horse and wagon. He would also criticize the executives of that salesman's company who did the same or even tolerated it.

But why should the electrical man criticise anyone in other industries? He is guilty of the greatest sales hypocrisy existing in modern business—which has tremendously hindered sales of electrical devices, particularly of the nature that build load and profit in consequence, namely, ranges, water heaters and air heaters.

The cause for this laxity is primarily chargeable to executives of utilities, manufacturers, wholesalers and dealers. They have not led the way as executives should. They have been afraid to "gamble" a few dollars a year of their own income to increase their industry's growth and have stuck to gas because it was cheap. Their friends and neighbors know of their gas usage; the competitive gas interests know. Why should the neighbor buy a range, water heater or air heater when Mr. Doe next door, vice-president of the Ultra Modern Electric Supply Co., uses gas. Why should Mr. Doe's salesmen believe in what they are selling. How can they?

All the fine pep talks, the conventions and booklets, will do little good until the men responsible for these sales get in the electric band wagon.

The writer has made a study of this appalling condition and suggests the following as a plan, which of course can be improved, to get something started NOW.

1. Teams be appointed by the electric clubs of various localities.
2. Teams to be similar in structure to the Community Chest teams.
3. Credits to be given to each man who gets pledges from members of the industry who will install:
   (a) Range.
   (b) Water heater.
   (c) Heavy-duty air heaters.
   (d) Portable air heaters.
4. Price arrangement to be made by wholesalers, manufacturers and dealers for sale to members of the industry.

Once this was started in a real bang-up way, watch electric sales grow. Why not now? Get your electric club behind this plan, end stagnation and indifference. Increase sales—the depression is over.

W. E. CRANSTON, JR.

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Dropped Ballast

The following letter of a contractor to one of his wholesalers, because of its convincing sincerity and the astute business attitude it portrays, certainly is worthy of being reprinted in these columns:

GENTLEMEN:

We have paid dearly for our top-heavy prosperity. We threw over the ballast of defined information developed by experience in the crazy belief that the temporary gain would be permanent.

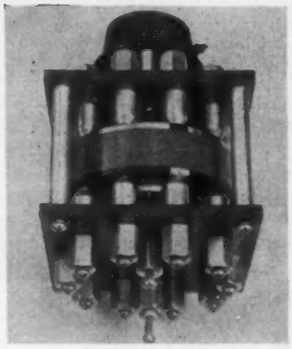
I believe that, instead of mourning our indiscretions, we should return to the known methods of the past and adhere strictly to the conclusions that we are certain of.

I have consulted John Overhead and find that he is exacting too great a toll from my business. Therefore I have decided to consolidate my office with my warehouse. And will no longer be able to offer you or your representative the comforts and aesthetic atmosphere that you have enjoyed in my office in the past. However, I believe that if you will bear with me in this sacrifice of these modern conveniences, that both your company and myself will profit, in that I will be able to continue to discount my bills. It is true that your salesmen will have to walk down an alley to find my office, but American history records that great wealth has been found at the end of alleys; and besides, (thanks to the speakeasy) the American alley has been glorified and raised to a higher place in our economic and social order . . . . .

Opera House, left, Veterans' Building, right, with garden court between. Outlets at street and in court serve d.c. for pageantry, ballyhoo, or military purposes. Marquis lighting on the court uses 220 Holophane control lens plates. Automobile call standards (shown below) are at rear of both Opera and Veterans' buildings, another at the adjacent high school; 450 cars were called and loaded in the court driveway in 19 minutes

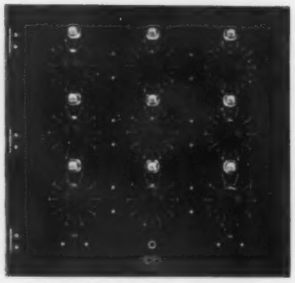
Electricity Plays Leading Role in Civic Opera Group

San Francisco's New War Memorial Opera House and Veterans' Building Designed for Every Electrical Facility to Enhance Uses of the Buildings

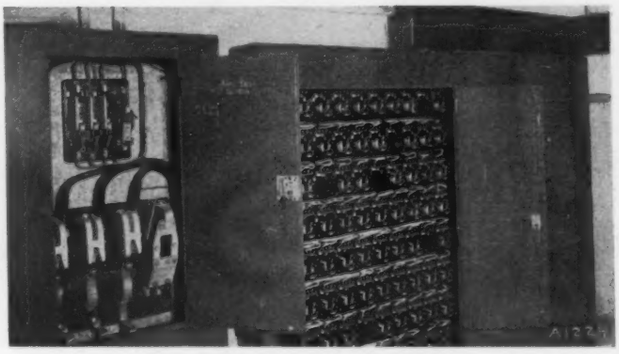


Above: Mechanism of circuit selector at master station (below) for dialing numbers on automobile call standards. Connected by 'phone from 4 locations all calls are dialed here at the Opera House

Illuminated, 3-digit 3 number calls appear on three such standards to call owners' cars



Ingenious arrangement of 100-pair circuits and latched-in contactors (both in panel, below, and in each standard) select and energize proper groups from 900 lamps in each standard to register three 3-figure calls

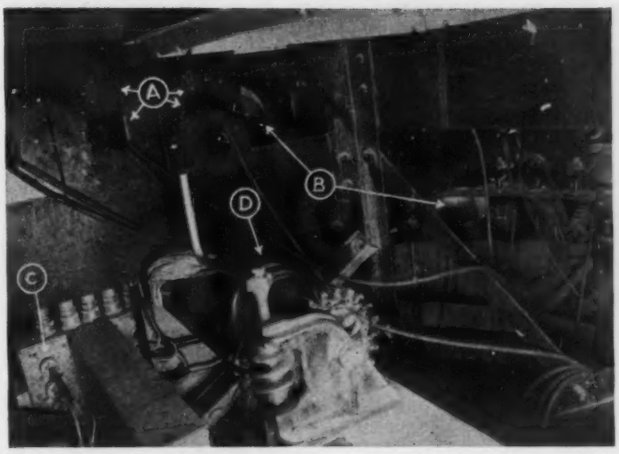


FIRST civic opera house in America, and an integral part of the city of San Francisco's civic center, the War Memorial Opera House and its companion, the Veterans' Building, take preeminence likewise in electrical facilities either for opera house, civic buildings, meeting chambers or art galleries.

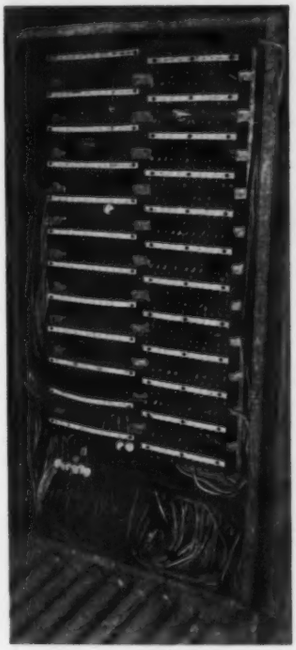
Space prohibits lengthy, even adequate description, so in the following pages pictures will be asked to tell as much as possible of the thoroughness of the electrical design and installation. Robert L. St. John, consulting electrical engineer, for over five years has developed the plans. In their final consummation he also called upon the experience of Charles Holzmueller, master electrician for the San Francisco Opera Association, upon the technique of other nationally known opera houses in New York, Chicago and elsewhere, upon the data and research of manufacturers of electrical equipment, and upon his own and his staff's inventive capacities for assistance in the massive detail entailed by such a project.

The mechanical, heating and ventilating engineers were Leland and Haley, San Francisco. Alta Electric Co., under superintendence of A. A. Schwartz, and foremaned by C. E. Porath, made the electrical installation and introduced some unusual construction features.

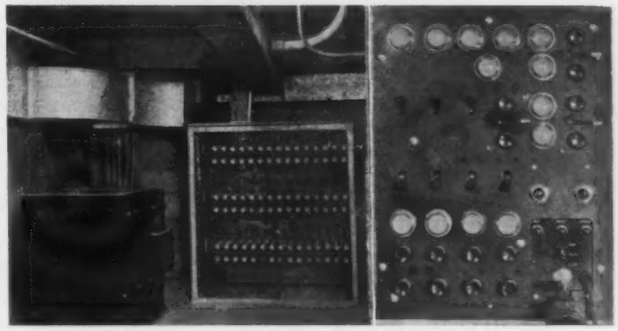
Supervising the work for Robert L. St. John was Elven Whelpley, who acted as "resident engineer," in a sense, on the job. The architects were Arthur Brown, Jr., with G. Albert Lansburgh collaborating architect on the opera house.



Electrical features of the auditorium, aside from lighting, include: inter-phone stations; 250 deaf set outlets located throughout the house, in balcony, boxes and on main floor; plugs for microphones throughout the house to enable direction of rehearsals from such positions; convenience outlets for occasional lamps or other decorative devices in corridors and in private promenade behind the boxes; work light outlets throughout the house requiring twist lock plugs; a maid's call from every box; provision for future organ and echo organ installation; conduit run for complete sound equipment in the future. The orchestra pit can be lowered from stage level 15 ft. to conceal the orchestra, or two rows of seats in front may be removed and the stage enlarged by that distance, all by means of elevators controlled either from stage or orchestra pit. Below the auditorium is a refreshment buffet with outlets for electrical appliances. All corridor, foyer and general building lighting is group contactor controlled

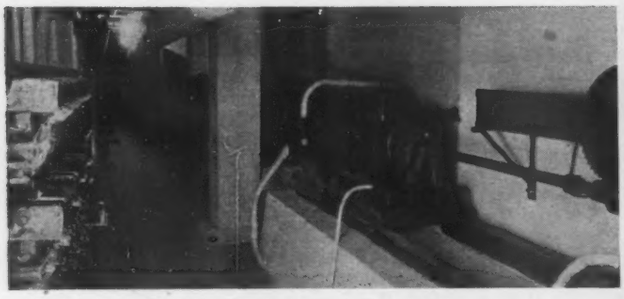


Above: Inside the central auditorium fixture, stage plug boxes (A) feed spots directed at drapes or architectural detail; (B) 112 flood lights illuminate ceiling and fixture vanes, served through rubber cord and lock plugs (C). All lamps, in the three colors used, blue, amber and white, are accessible from within, except in lower tiers, which can be lowered for lamping by means of winch (D). Left: In the attic above the main fixture is this terminal strip board, whereon all circuits may be disconnected or traced. Colored wire throughout facilitates tracing. Both are new features. The main fixture, 25 ft. across, one of largest ever installed, has connected load of 60 kw.

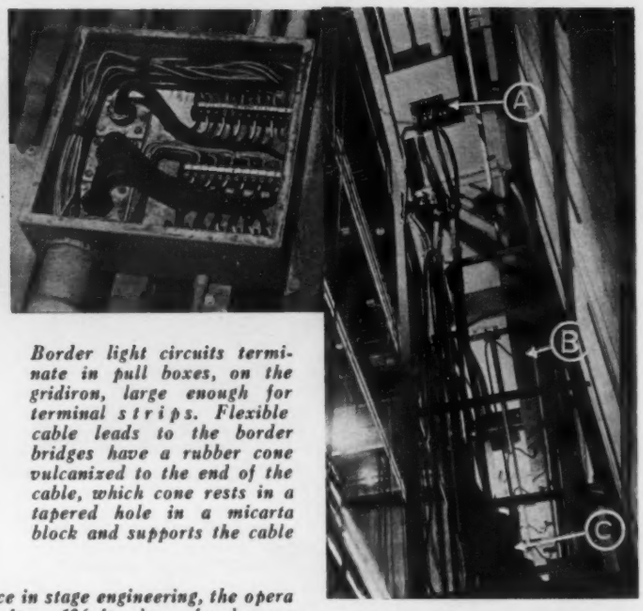


Projection rooms are wired for future equipment. Above: left; rheostats in special vault below projection room used to preset resistance for warming up arcs before projection. Right: Compact control panels in projection booth on which buttons start, stop, dowse, heat up arcs, throw on full voltage, control curtains, etc. Four sets of 4/0 varnished cambric cable feed d.c. from the projection room panel; 2 sets of 2/0 cable supply diffusers, effect machines

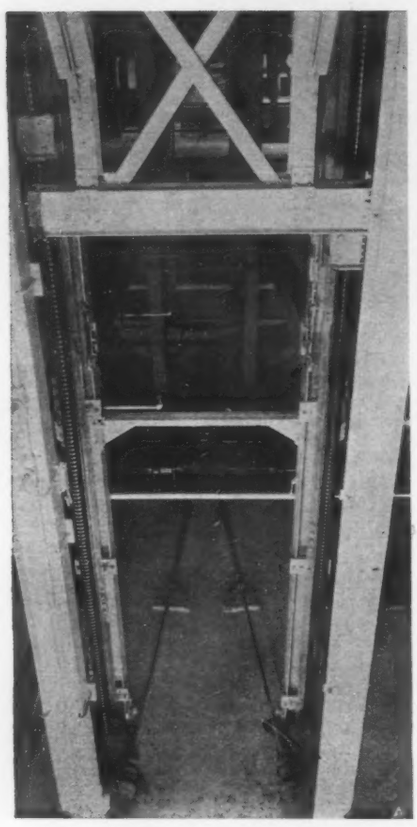
Simple, chamois toned walls provide unusually sympathetic background for subtle lighting effects in the opera auditorium. Ceiling spots at (A) flood the curtain and architectural details. General lighting comes both from the simple central fixture and from coffers (B) in balcony, gallery, and main floor ceilings, and from special fixtures in the boxes and stalls on the horseshoe. All general lighting, even in boxes, is in four colors to conform to the ceiling fixture, all controlled from the stage board or prompt booth, or remotely from projection booth, (C). Above the orchestra pit, (not shown) and from above the ceiling are 6 pockets of 4 colors each feeding 24 floodlights directed on the orchestra. At the balcony face, (D), 4 color circuits feed the 5 groups of stage floods or special spots mounted there. Small reception rooms behind each box likewise lighted by stage controlled fixtures employing 4 colors, have a separate locally controlled light to accommodate patrons



Seven sections of the orchestra pit can be lifted from 15 ft. below stage level to the stage by separate elevators or as a group. Above: Elevator equipment, with chain driven cam mechanism operating limit switches. Below: One of the four electrically operated stage sections, movable from 11 ft. below to 8 ft. above stage level, normally concealed beneath a motor operated sliding stage floor. Scenes set on these lifts can be brought up from below at cue. Hand crank adjustment tilts the top to build up a hill scene

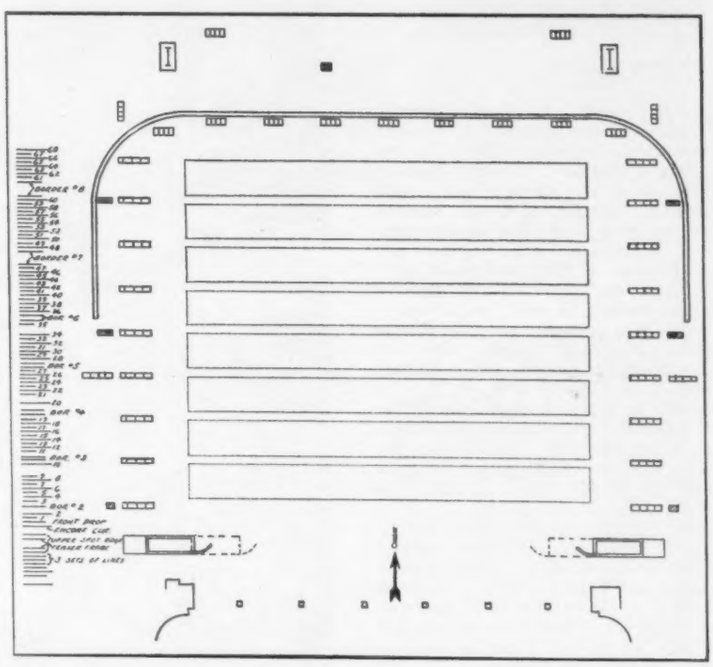


Border light circuits terminate in pull boxes, on the gridiron, large enough for terminal strips. Flexible cable leads to the border bridges have a rubber cone vulcanized to the end of the cable, which cone rests in a tapered hole in a micarta block and supports the cable

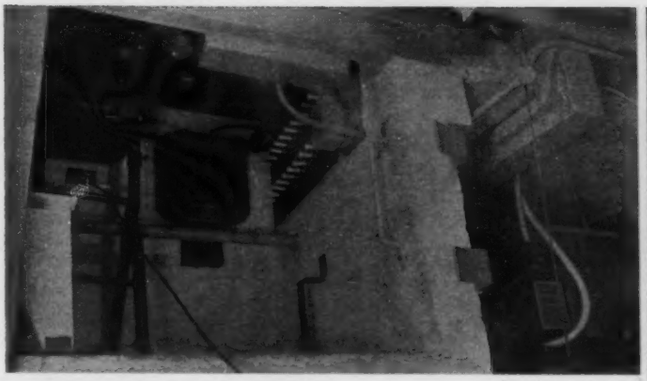


Called a masterpiece in stage engineering, the opera stage has size—72 ft. x 126 ft. clear of columns; height—fly galleries at 39, 62, 82 and 102 ft. above the stage; two gridirons, one 116 ft., the upper 125 ft. above stage. The proscenium is 50 ft. high, and 52 ft. wide. Below is a diagram showing location of arc and incandescent stage plug pockets, the 80-ft. high cyclorama, the movable tormentors, and the motor operated border bridges. Border 1 is the concert bridge. Borders 2 to 6 are in three sections, a 42-ft. center section and a separate 12-ft. section at each end, which can be used full stage or independently for special effects; raised or lowered individually. These borders are equipped with 200-watt aluminum reflectors, with frames for glass or gelatin, wired for four colors. Above on each bridge are 30 receptacles on 15 circuits, 2,000 watts each, for spots. Borders 7 and 8 are of 1,000-watt area floods, in four colors, to flood the cyclorama. Banks of similar floods, on casters, can be used on the cyclorama from the stage floor or stage lifts below. Direct current pockets on stage, below stage, on each fly gallery and even on the gridiron, are available

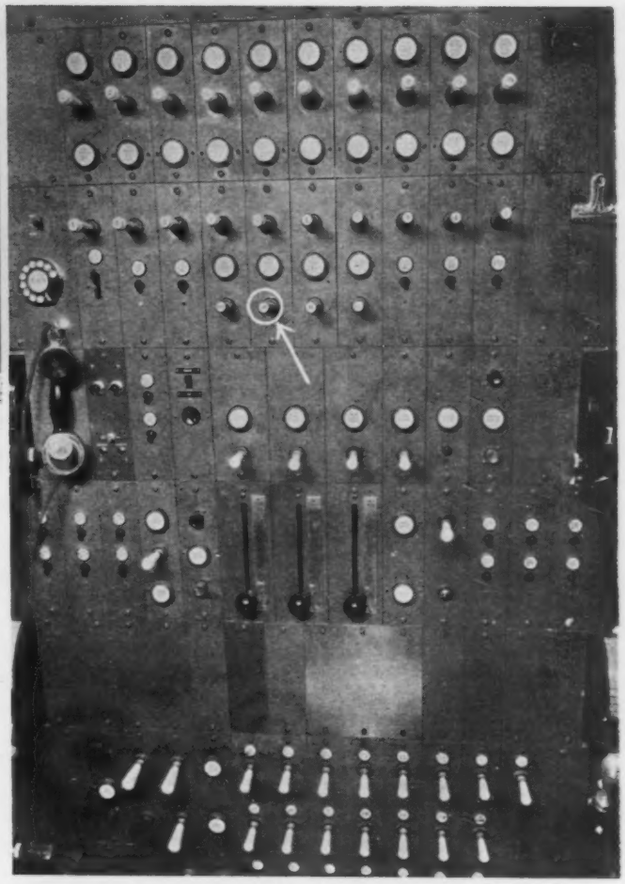
Above: Looking up under the concert or No. 1 border, a bridge which can be raised or lowered. This bridge is capable of handling 72 spot lights. Above is another bridge, with similar capacity and above this a permanent bridge equipped to handle 24 more spots; all of these immediately behind the asbestos curtain. (A) The under side of a pull box described above, with cables feeding through micarta blocks. (B) A trough to which spots are plugged with twist lock plugs. (C) the spots in a row on the bridge deck. All 7 of the other borders also have spot bridges and similar plugging troughs; are equipped with upward and downward work lights



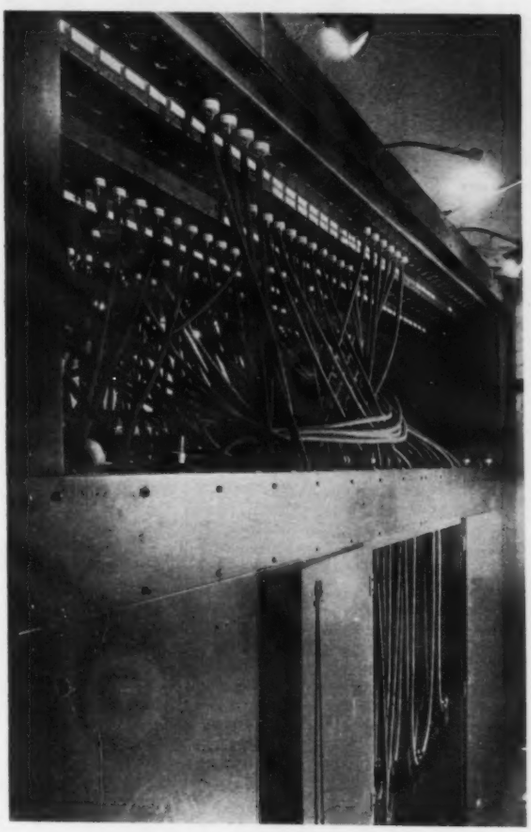
Beside the four electrically operated stage sections are four rows of counterweighted manually operated platforms in 29 separate sections, capable of a 16-ft. elevation. The footlights are disappearing, and motor operated. A gauze frame or "scroto trap," on an elevator, at front of the stage, can be used in underwater scenes. Thunder, wind and cloud effect machines are mounted on the gridiron, electrically controlled. Auxiliary stage equipment includes two freight elevators, a scenery drop elevator for storing scenery, a scenery painting frame which can be raised or lowered, with a painting bridge also capable of raising or lowering, lighted with strips in four colors for color matching; a carpenter shop, a property shop and an electrical shop, each with electrical tools, located on the fly galleries. Portable winches are used extensively. Dressing rooms, on five floor levels, next to the stage, each are equipped with light encircled mirrors, outlets for lamps, pianos, etc.; a cone speaker for calls from stage director



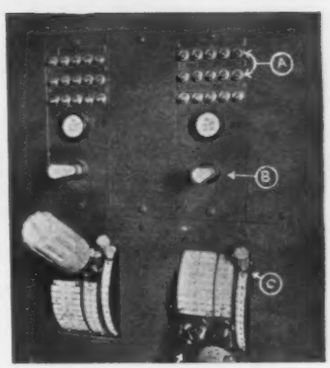
Above: Prompt booth, built into stage, on a line with the footlights, from which remote control of all stage lighting may be had through preset arrangement and "one button control." Mechanism for lifting footlights and footlights themselves are also visible



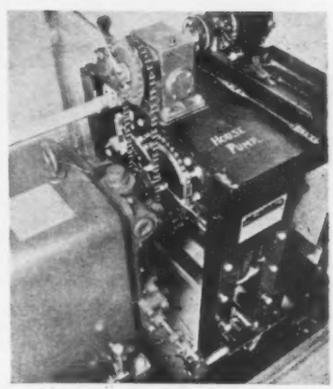
Fed from four separate feeders, with buses arranged for interchange by means of contactors, (manually operated from the pilot section so as to insure trouble clearance), the main stage switchboard, 32 ft. long, adopts Engineer St. John's patented "one button control," a gift to the city in this job. Every type of light and power service to the stage is mastered through contactors. Any desired selection may be made on the stage pilot panel for all controlled circuit contactors, and so set that any single one, or any group may be controlled through master relays from the stage or the prompters booth. (See page 25 for more description of the entire range of flexibility). Right: The pilot section. One button master is designated by the arrow and circle. Above it are the 10 scene, 5 cue, and 5 house preset masters; next to the stage one button master are stage blackout, house master and blackout. Below are potentiometers governing their speed

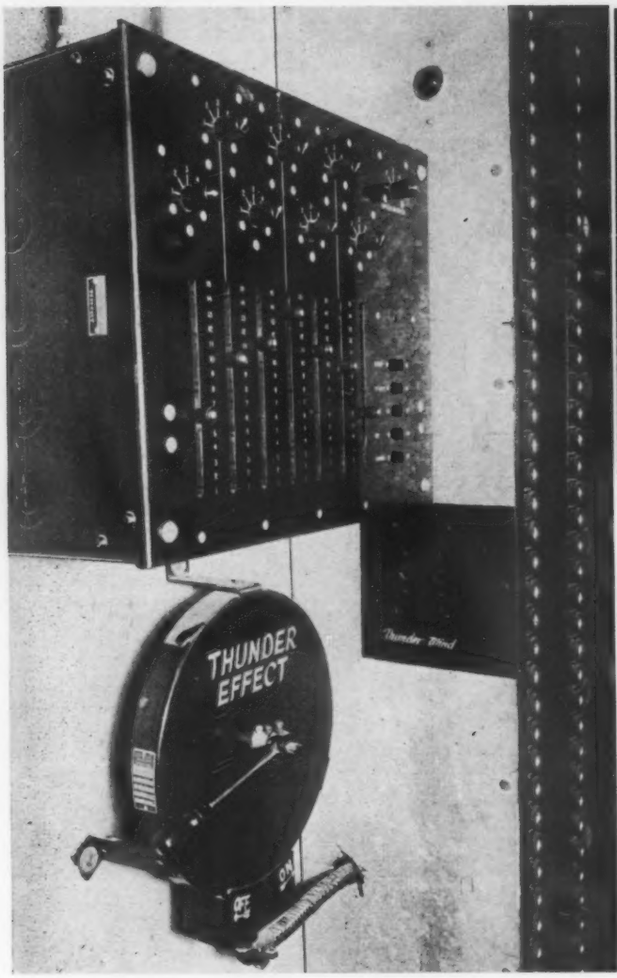


Right: Each color circuit has 10 nickel plated scene preset switches (A) and 5 brass cue switches; a pilot lamp; a switch handle to connect into the preset set-up or to manual control; and a manual dimmer handle, with a wide segment, and selecting button for connection to either of two hydraulic master shafts and (C) a narrow segment, for presetting the droping in or out of that dimmer



Left: An innovation, employing telephone technique—a plugging-in board so that with 70 stage board control levers, connected to 140 flexible cords in pairs, fitted with twist lock receptacles, selection can be made of 320 stage pockets. Weighted pulleys draw cords back into the cabinet when not in use. Phantom loads can be applied to any circuit from 50 watts up to full capacity of the dimmer plate to balance its proportional dimming. Right: The master dimmer shafts are flexibly controlled by oil hydraulic pumps, whose speed is controlled by means of oil ports, in turn selected by a small motor operated from a potentiometer on the stage board. The transition cycle of dimming can be preset from 1 sec. to 22 min. with changes of speed at will. This feature gives a positive mechanical control without maintenance or adjustment hazard

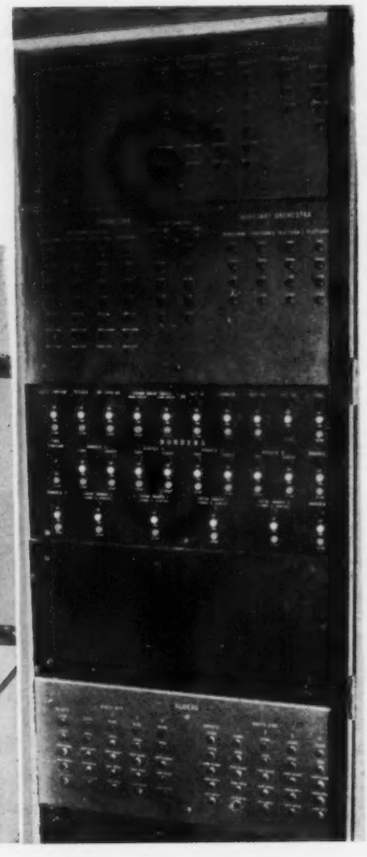


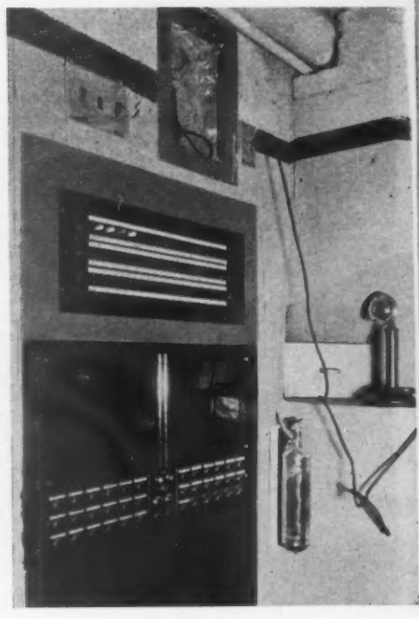


At the stage director's position near the main switchboard, are grouped the various control features, such as the opera drape control above), thunder and wind effects, and the dressing room call system (right) while nearby are the stage switchboard and the motor control for elevators and borders. Likewise a panel for controlling the heating and ventilating of the opera house is nearby. The dressing room call system has two panels, with push buttons below each. A call is indicated by pilot lighted number on one panel. Return answer registers on the other panel. Above is a similar grouping of switches by which the director may plug in a hand microphone and talk to any dressing room, all of which are equipped with a cone speaker. Control of the remote microphone outlets in the auditorium for rehearsal direction is also centered at this pont. Horns on the balcony above the stage board or a cone speaker may be selected for hearing the directions. Control of microphones and sound equipment for deaf sets or for public broadcasting from the opera stage is centered back of the main switchboard

First used anywhere is the new front curtain, or opera drape, entirely electrically operated and extremely flexible. On the small panel, (left) the sliding handles of the potentiometers are set to the pattern required for the shaping of the festoons of the front curtain. Also the speed at which each portion is to raise is set. Then, by a push button, the curtain is operated. Various speeds can be given to various portions of the drape, or only a small opening, a narrow, wide, high or low opening can be preset and obtained for special types of settings or scenes. On the upper gridiron, (above) are the lifting motors and winding drums, with adjacent contactor cabinets. Limit switches also protect against overrunning. Wound on the end of the drum shaft is a piece of wire rope which runs to an indicating telltale board at the stage on which a piece of chain simulates the festooning of the stage opera drape

Right: Push button control board; one section for stage bridge elevators; one for orchestra and auxiliary orchestra elevators; another for all motor operated borders and curtains; and one section for the motor operated sliding stage sections





A feature of the dimmer wiring arrangement is made possible by use of the plugging-in board. Each stage plug pocket, by means of doubling the cord connections, can be given a capacity up to 4,000 watts, since the double sided dimmer plates are wound for 1,000 and 2,000 watts, and can be multipled through the plugging-in arrangement if future lighting requirements ever call for 4,000-watt incandescent lamps

Main power panel in the Veterans' building. A similar board is used in the Opera building. The wall space shown at the end of the board was saved by the use of the compact roller type of switch

Flexibility of Power and Lighting Is Provided

POWER supply to the two buildings comes from three separate feeders, each from a separate power house, in turn connected there to the center position of a double throw switch, one side of which will energize the feeder from the standard bus, supervised by load dispatcher and which is transferable to any normal source of power. The other side of the double-throw switch ties in directly or by means of a tie-in bus to a steam generated supply. Thus as long as there is energy avaliable in any of the three steam generation plants or a hydro-system, the Opera House and Veterans' building will have energy. The entire city would have to be in complete darkness before some source of supply would be unavailable.

The entire installation, in this respect, becomes an emergency system, and for that reason no battery standby was found necessary. There are two transformer vaults, both outside the building line, in the street, one in the Opera with three 450-kva. transformers, the other with a single 450-kva. transformer for the Veterans' building, all four transformers being tied together and capable of being selected to carry the normal stage load in case of need.

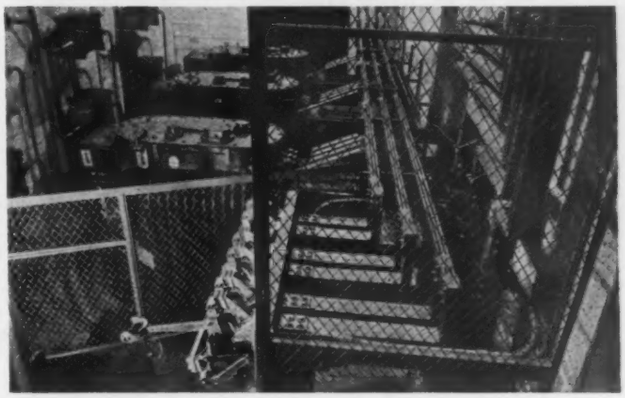
Main switchboards in both Opera House and Veterans' building are connected to the secondaries of the transformers by means of buses through main disconnecting breakers, so that the main board is used as a main distribution panel for the many uses of light and power in the buildings.

Stage switchboards are fed from the main panels by means of four separate and distinct feeders, with buses so arranged on the contactor panel of the stage switchboard that in case of failure of any set of feeders the load can be carried on the other three. This operation is manual so that trouble on the line will be cleared before reconnection.

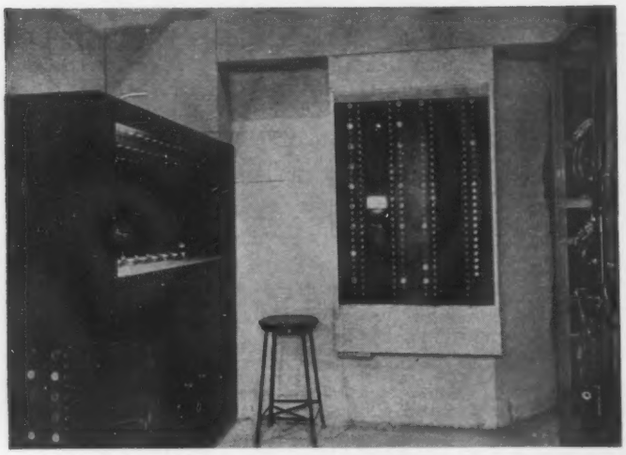
A remotely controlled, magnetically held contactor is provided for each separate type of light and power service to the stage. Each and all of these are arranged so that any desired selection may be made on the stage pilot and control panel for any or all controlled circuit contactors. These contactor controls are so set that any one, any group, or all may be controlled through master relays from the stage pilot station or the prompters booth in a series of scenes or cues. Connections are arranged so that the matter of sequence may be selected either on or off for scenes or cues similar to the circuits controlled. They are also arranged so that they can be blacked out without interfering with any scene selected, cue selected, or sequence of controls selected, in such manner that in the same sequence individuality or multiplicity of controls can be actuated without changing the circuit contactor controls. After the circuit selection has been made the same cue or scene controls can be operated at the prompters booth as at the pilot panel, even including blackout. The house control is similarly mastered and capable of preset, with five selections of circuit contactor controls and five sets of master and sequence controls as well as a separate blackout master.

Stage and house blackout masters operate to release all magnetically held scene contactors without any interference and irrespective of any scene to which connected. Thus it is possible to come back to the same scene or any predetermined scene merely by pressing one button, or lever, which is the stage master. Through the cue presets it is possible to pick up any individual light or group of lights irrespective of the load or other scene sequences.

For stage lighting either of two powered shafts, for



Above: Three 450-kva. transformers in the vault at the Opera building, tied in with another 450-kva. transformer in the Veterans' building vault; any one of the transformers, with its overload capacity, is capable of carrying the normal stage load. This provides four sources of power. Below: The motor generator room in the opera house, with two 50-kw. sets. Another similar set is seen in the picture on this page, showing the Veterans' building board. All three sets can be run in parallel to feed d.c. arcs on the stage or in the projection room of either building

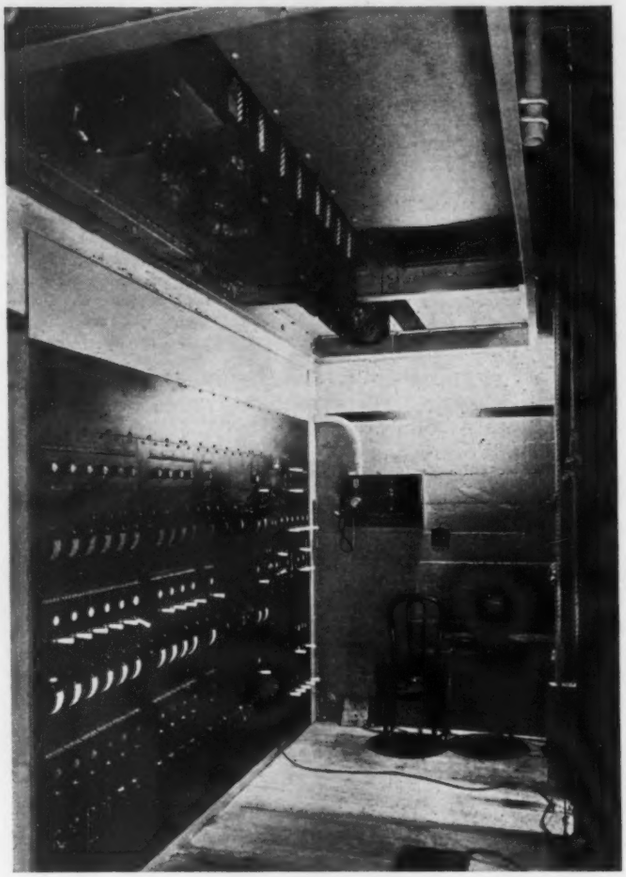


The same features of stage and auditorium lighting control used in the Opera House are employed in the auditorium in the Veterans' buildng. Back of the stage board is a single room containing a small plugging-in board for selection of stage pockets, a magazine fuse panel, and the rear of the dimmer board can be seen at the right

house lighting a third powered shaft, may be used to operate the dimmers. These shafts are powered by means of links to a hydraulic ram. Each ram is controlled by its individual pump, in turn having its own motor. The speed of the motor and pump are constant but the time interval of the hydraulic ram is controlled by opening or closing the oil ports in the pump. Thus it is possible to rotate the shaft from blackout to full brilliancy or vice versa in less than 1 sec. By changing the size of the opening in the oil port, the time interval can be extended in 15 positions, to approximately 22 min. Selection of these positions is done on a sliding potentiometer on the stage pilot panel which operates a small motor on the ram that selects the desired oil port opening for the speed required. By moving the potentiometer during a sequence it is possible also to accelerate any portion of the cycle or, conversely, to slow it.

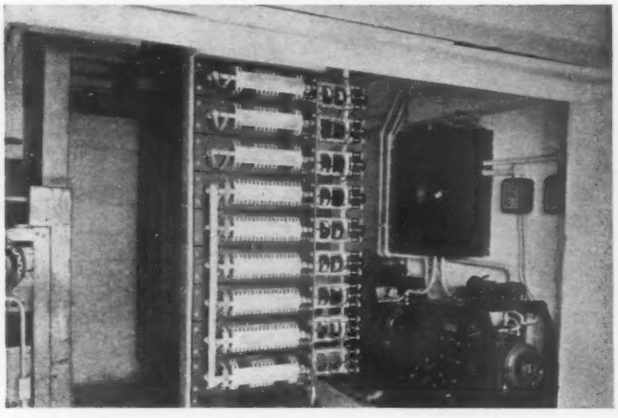
Mechanical and ventilating equipment does not comprise what would be termed a full air conditioning system, although for San Francisco climate it serves all major needs. Six supply and four exhaust fans provide air change of approximately 30 cu.ft. per min. per seat for the auditoriums, with auxiliary fans for dressing rooms, lavatories, projection rooms, broadcasting room and even the main lighting fixture, as well as for the room in which scenery drops are stored. Fresh air is dry filtered, ozonated and heating is applied either locally or to the air in the duct system, with thermostatic control of temperature.

A feature of the Veterans' building auditorium is that its floor may be raised from normal auditorium position 30 in. to stage level for use as a ball room, the seats being removable, and the footlights disappearing. A removable platform in such cases fills the orchestra pit. A 5-hp. motor operates a hydraulic lift for this operation.

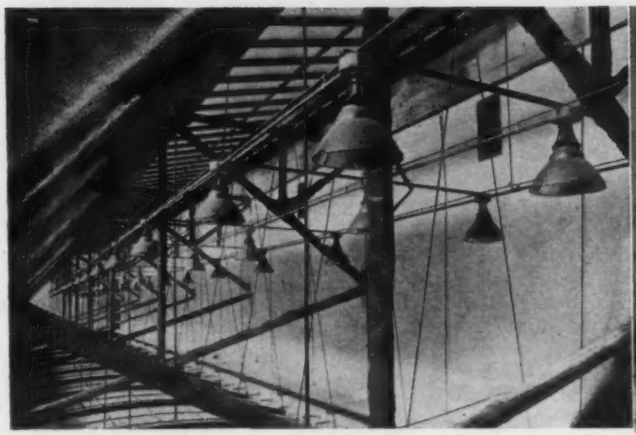


Except for number of circuits, the Veterans' building auditorium stage switchboard has all the features of control of the Opera House. In the foreground are the dimmer sections, next the master section, and near the corner, the pilot control section. On the wall is a dressing room call panel similar to that in the Opera

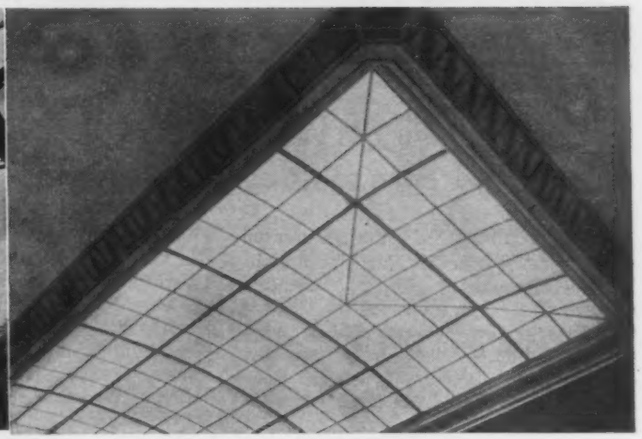
Below the Veterans' building stage is the smaller edition of the Opera House contactor room, containing reactor dimers at extreme left, contactor board, with Mr. St. John's "one button" master relays in the foreground, and at right, two oil hydraulic dimmer shaft mechanisms



The Veterans' building is essentially a building designed for lodge and meeting purposes, with art and trophy galleries on its fourth floor. On the main floor are offices with usual convenience outlets, telephone and intercommunicating telephone equipment. Likewise a large kitchen is provided for banquets. In the basement is another kitchen and several large meeting rooms for band practice, drill teams, etc. Storage for paintings, dressing rooms for the auditorium, and the main boiler room for both buildings are also housed in the basement. One room is devoted completely to a



Natural daylight skylights above the art and statuary galleries on the fourth floor of the Veterans' building are supplemented by reflectors. The contractors adopted a novel suspension method, gained from experience at a Ford plant, that of using a messenger cable



To direct light upon the gallery side walls, Holophane directional lens plates were installed along a continuous trough at the edge of the false skylight in some of the galleries. Preliminary tests have shown intensities of 35 foot candles on the walls

full automatic telephone equipment for the intercommunicating phones in the two buildings.

Boiler room equipment includes two 5-kw. vacuum pumps, electric thermostatic control for boilers, oil burner provision although present use is gas, flushing water, hot, cold, and fire pumps, ventilating fan controls for the Veterans' building and sump pumps. These sump motors, as well as sewerage ejectors, work on three stages of automatic control. At a certain level one pump is operated, at a second level both pumps, and if water reaches a third level an alarm is rung in the boiler room.

All fan, pump or other motors are capable of control both at the switchboard in the boiler room or at the motor itself.

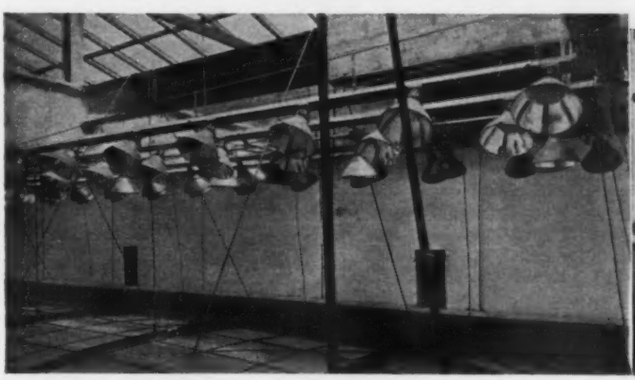
Second and third floors of the Veterans' building are devoted to lodge meeting rooms, each with an office or ante room, a candidates' waiting room and ten are equipped with kitchens, each with a 5-kw. outlet for a range.

Other electrical features include 14 sets of elevators beside the orchestra and stage lifts referred to in the preceding; a 49 box fire alarm system; a burglar siren alarm system with stations in the ticket offices; 269 gangs of floor pockets; an electric heating metal baseboard for the fourth floor offices of the Opera building; complete piping, with fishing wire installed, for future sound or broadcasting systems in both buildings.

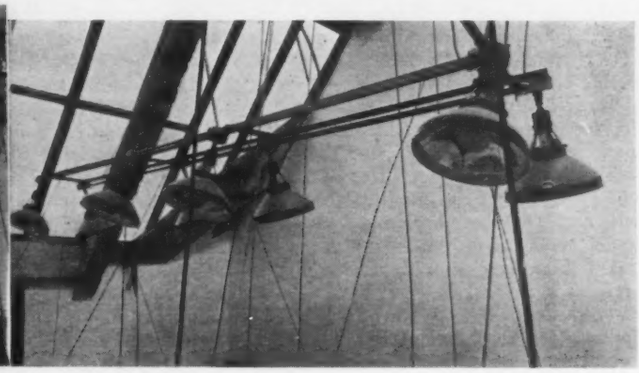
In the construction work the Alta Electric Co. used many labor saving and ingenious devices. All heavy wire was pulled in by portable winches capable of either a 16 or 30 ft. per minute pull. Much of the material was prepared and cut in advance of installation and quickly placed.

As run, all pipe was threaded with iron wire to be used later to facilitate fishing; some 30,000 ft. of such wire was used. Colored coded wire was used to great advantage and eliminated circuit tracing with buzzers. At the stage switchboard everything between the contactor room and the plugging-in board was run in metal troughing, as also were many of the stage switchboard and magazine panel runs. All telephone and automobile calling system wiring was in lead cable. Each automobile call standard had four No. 8 wires feeding the 3 1-kw. transformers used in these standards for power. A 100 pair cable also ran to each standard to control the contactors used inside them. No wire smaller than No. 12 was used in any lighting circuit. Ample provision was made for voltage drop. For example, 3-in. conduits with 48 No. 8 wires were run to each of the gridiron pull boxes to feed each border light.

In one gallery, instead of supporting steel tube and angle iron frames with reflectors mounted at outlet boxes, a Curtis strip was used, similarly supported from messenger cable, however. The cable insured a straight line for the rows of reflectors



Smaller galleries for statuary or trophy courts, where messengers were impracticable, made use of an angle iron frame and steel tube assembly, suspended from the roof trusses by means of tie wires. Control of gallery lighting was centered at panels



Central Public Service Restores Stock and Control of Pepco to Oregon Investors

RESTITUTION of the preferred stocks of Pacific Northwest Public Service Company (Pepco), Portland, Ore., to all Oregon investors who traded these stocks for the preferred issue of Central Public Service Corp., its parent company, or who bought Central Public Service preferred for cash, is promised through a deal just consummated by Franklin T. Griffith, president of Pepco, with A. E. Peirce, president of Central Public Service Corp. In this deal, Seattle Gas Co., the common stock of which formerly was owned by Pepco, passes to Consolidated Electric & Gas Co., another company affiliated with Central Public Service. At the same time, absolute management of the Northwest company passes to Oregon people through the resignation from the directorate of Pacific Northwest Public Service of Mr. Peirce and his associates in Chicago (who will be replaced by Oregon citizens) and through the deposit of all Pacific Northwest Public Service common stock owned by Central Public Service Corp. in a voting trust to be administered by a local committee.

Coincident with this announcement on Dec. 18, which was received most favorably by local stockholders and customers of Portland General Electric and Portland Traction companies, subsidiaries of Pacific Northwest Public Service Co., was the announcement that a loan had been secured from Chase National Bank, New York, for retirement on maturity, Jan. 1, 1933, of $7,500,000 short term gold notes of Portland General Electric Co.

Exchange of Pacific Northwest Public Service preferred for Central Public Service preferred is to be effected through an intermediary corporation, Consolidated Securities Co., to which have been transferred sufficient shares to take care of every Oregon purchaser of Central Public Service preferred or original owner of Pepco preferred who subsequently transferred to Central Public Service. Exchange will be effected by a local committee consisting of Mr. Griffith, C. C. Colt, banker, and H. B. Van Duzer, lumberman, as soon as practically all the Central Public Service preferred owned by prospective transferees is deposited with the Title & Trust Co., Portland. The exchange will be made on the identical basis on which the original exchange was first made, while cash purchasers of Central Public Service will receive Pepco preferreds in exchange on the basis of the $57 or $58 they paid for the $4 Central Public Service and $100 for the 6 per cent and $6 preferred, and $105 for the 7 per cent prior preference and the 7.2 per cent preferred of Pepco. This offer affects 11,000 Oregon holders of Central Public Service preferred and involves 121,370 shares of Pacific North-West Public Service preferred, or something over $12,000,000 of par value.

In the meantime, dividends on Pacific Northwest Public Service preferred have been passed to permit conservation of cash for rehabilitating the company and its subsidiaries and to carry them through the depression. These stocks all are cumulative; dividends on some accumulate from October 31, 1932, and on others from Dec. 31, 1932.

FRANKLIN T. GRIFFITH

He brought Pepco back to Oregon

Local control of Pepco has been effected by the deposit of 175,810 shares of the common stock of the company, being all but about 1,000 of the outstanding shares and being all now owned by Central Public Service Corp., with a voting trust consisting of J. C. Ainsworth and E. B. MacNaughton, Portland bankers, and Mr. Griffith. This voting trust runs to Nov. 1, 1942, but may be terminated in 1937 provided that all accumulations of dividends on the preferred and prior preference stocks of the Pacific Northwest company have been paid. Successors to the voting trust must be Oregon men.

The plan has received the approval of James W. Mott, state corporation commissioner, and of officials of the Portland Restoration Organization, Inc., an organization of stockholders seeking redress. William F. Woodward, president, and MacCormac Snow, attorney for the latter, have announced they will advise their members to accept this offer and disband the corporation. Some thirty suits alleging fraud and misrepresentation in the original exchange of stock have been filed against the Portland company and Central Public Service, and several attorneys representing these litigants have signified their intention to advise their clients to dismiss their suits and accept the proffered exchange.

Exploitation Charged By Commissioner

Four days prior to the announcement of the stock restitution plan, however, Oregon Public Utilities Commissioner Thomas had published his report on the investigations into the financial transactions between Pacific Northwest Public Service and Central Public Service (EWEST, Oct. 1, 1932, p. 166, et seq.). He charged that the latter holding company had exploited the former and its subsidiaries for the benefit of itself or some other subsidiary, and to the detriment of the Oregon operating utilities.

Several transactions were cited as unlawful and invalid; the commissioner also arraigned the inter-company system of bookkeeping, which treats all companies as a unit. The order states that mails were used to transmit false and deceptive information and misrepresentation as to the value of the stocks (of Central Public Service) being sold, and that much of it was sold prior to the issuance of a permit by the state corporation commissioner.

On strength of this, and after a separate investigation, the corporation commissioner had determined to present the case to the grand jury as a violation of the Oregon Blue Sky law. After the stock deal was announced, the commissioner made the statement:

"While it is still my opinion that the Blue Sky law was violated and that Albert E. Peirce is responsible therefor, and while, unless otherwise advised by the attorney-general, I shall proceed to have this case presented to the grand jury, nevertheless I am willing that evidence of this restitution be presented to the grand jury along with the facts disclosed by our investigation . . . . . In the plan offered, (my) desire (to effect restitution for Oregon citizens) has apparently been realized, and I believe that the plan offered embraces the extreme financial ability of the companies involved to make restitution."

Not Affected by C.P.S. Receivership

In Baltimore, Md., a United States District Court appointed Iredell Inglehart, Baltimore financier, as receiver for Central Public Service Corp.; bankruptcy suits against the holding company have been filed in Baltimore and Chicago. Just what effect these actions will have on the stock transaction is not known definitely, but Franklin T. Griffith has stated that "the bankruptcy proceedings instituted against Central Public Service Corp. should not affect the completion of exchanges contem-

plated by the plan. Nor should such bankruptcy proceedings in any wise affect the future of Pacific Northwest Public Service Co. or of Portland General Electric Co."

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Oregon Commissioner Eyes Salaries Paid Officials

Investigation by C. M. Thomas, public utilities commissioner of Oregon, of the capitalization, corporate affiliations, practices, management, salaries, and general dealings of Portland Gas & Coke Co., Pacific Power & Light Co., Inland Power & Light Co., and Northwestern Electric Co., all subsidiaries of American Power & Light Co., opened with public hearing in Portland, Dec. 13. This proceeding is on the commissioner's motion issued in November.

Specific items to be inquired into, as cited in the complaint, are the basis upon which salaries are fixed and allocated and what services are to be performed thereunder; the nature of the contract between the operating subsidiaries and Electric Bond & Share Co. for managerial, construction, financial and general services; examination of contracts between any of the above corporations and the passing of funds between them, and for what purposes; and examination of the corporate structure, stock ownership, capitalization, expenditures and receipts of each of the corporations.

After daily hearings during the week, the commissioner adjourned the proceedings until the middle of January.

Guy W. Talbot, president of the companies under investigation, occupied the stand most of the time. He was questioned at length regarding the reasonableness of his own salary and those of his principal department heads. The commissioner expressed the opinion that these salaries were too high, introducing in evidence letters from various municipal plants throughout the United States, showing a generally lower level of salaries paid by these concerns for officials occupying somewhat similar positions. Mr. Talbot refused to accept a voluntary cut in the salaries under consideration, contending that positions of responsibility in private corporations were not comparable to positions with municipalities.

Second phase of the hearing concerned transactions by which Inland Power & Light Co. acquired various small properties or built certain sections of the power system, later leasing these properties to Pacific Power & Light Co. or Northwestern Electric Co. for operation. The commissioner questioned some of the valuations at which these properties were appraised for bookkeeping purposes and inquired extensively into the lease agreements. It appeared that, in most instances, Inland Power & Light borrowed the purchase money from American Power & Light at 6 per cent and charged the operating subsidiary 6 per cent on this amount in the lease agreement, thus "washing out" the deal. It was explained by company officials that Inland Power & Light was created to own and hold certain properties which could not be so cheaply acquired by the operating subsidiaries direct, because of financing restrictions imposed by the then-maturing mortgages of the Pacific and Northwestern companies.

A tilt arose between the commissioner and John A. Laing, general attorney for the companies under investigation, when Mr. Talbot was asked to produce the translation of a code message sent from an American Power & Light official to him. Mr. Laing insisted that all the books and accounts of all the companies were open to the commissioner, but that some of the correspondence was of a confidential nature and that the companies were protected by law from the necessity of revealing such confidential matters in open hearing. Mr. Thomas reiterated frequently that he was attempting to show that the local operating officials were not free agents, but were dominated largely by the owning and managing companies. Mr. Laing censured the commissioner for pre-judging the case.

Commissioner Wants Budgets Pre-Approved

In connection with the preliminary investigation into Mountain States Power Co., after Commissioner Thomas had adjourned the hearing into the Tillamook unit of the company, the commissioner announced that he would ask the legislature to enact a law providing that budgets should be submitted at the close of each year for the succeeding year, with the right of the commission to pass on such items it now is authorized to reject, and with the right of the company to appeal from such decisions. The object is that through such a law the commissioner could pass on expenditures before they are made instead of afterward, as now is the case.

Engineers for the company presented a mass of statistical data on book and reproduction costs and depreciation of property, but the questions of holding company fees, contracts and salaries has been left until the final hearing into the power company as a whole.

Northwestern Gets Rate Injunction

An interlocutory injunction against the order of the Oregon public utilities commissioner reducing certain rates of the Northwestern Electric Co., was granted by the Federal Court, December 5 following a hearing in November (EWEST, Dec. 1, p. 245).

The company was ordered to continue its $150,000 bond, that being the estimated amount of the reduction that would accrue to rate payers in the course of a year, if the original order is allowed to stand. The injunction is to be in force pending hearing and final determination of the case.

Los Angeles Bureau Budgets $11 Millions

Awaiting only ratification by the California Legislature of the city charter amendments passed in November (EWEST, Dec. 1, p. 244), Los Angeles Bureau of Power & Light officials are preparing to begin construction of the Boulder Canyon transmission line at an early date.

For the present fiscal year, the Bureau has budgeted $11,088,000. Of this $6 millions will be expended for general improvements, the remainder to be spent on the line. Beginning with the fiscal year July 1, 1933, the Bureau contemplates expenditures of $14,493,000 on new construction work.

Expenditure of $1,276,779 on several construction projects was started in December.

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$176,845 Value Set on Tulare Power System

Engineers of the California Railroad Commission on December 13 appraised the Tulare distribution system of Southern California Edison Co. Ltd. at $176,845. The valuation covers physical properties after deduction for depreciation; as of April 30, 1932, the properties were valued at $216,919, but depreciations since then have reduced the appraisal.

Tulare long has wanted to purchase the distribution system to operate it municipally, but no agreement could be made as to a purchase price, Edison officials valuing the properties at $350,000 and Tulare at $120,000.

On Jan. 12, the hearing will be resumed so that Tulare and Edison engineers can submit objections to the findings. Both agree that the inventory is substantially correct, but indications are that they will differ on valuations of some of the listings.

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California Utility Taxes Less Than on Property

Decrying the fact that the public utilities of California are taxed only $1.24 per $100 of actual value as compared with a $1.85 per $100 tax on common property in the state, a report, requested from the state legislature, was last month publicized by the California Tax Research Bureau. The findings will be turned over to the legislature during the month for such action as that body may take.

The report points out the Pacific Gas and Electric Co. pays $1.11 per $100, Southern California Edison Co. Ltd. pays $0.96 per $100; to bring the tax burdens of the utilities up to that of property, it would be necessary to increase state taxes from the present 7.5 per cent to 11.19 per cent of gross income, an additional revenue yield of $6,968,777.

Federal Judge Denies City Right to Build Plant

Of great importance to electric public utilities was a decision rendered by Federal Judge J. Foster Symes when he granted a permanent injunction, on Dec. 10, restraining the city of Englewood (adjacent to Denver) from proceeding with its plan to erect a joint light and water plant. The ruling is a victory for the Colorado Central Power company, which supplies Englewood with electricity. Counsel for the Colorado Central attacked legality of a contract whereby the Municipal Power Development Co. agreed to construct the municipal systems for $599,872.74 in revenue bonds (EWEST, Oct. 1, p. 168).

The court's memorandum designated the municipal project as "economic waste," and it termed revenue bonds "an artifice or scheme to do that which the constitution declares to be against public policy."

Judge Symes has had the case under advisement since Oct. 7, when attorneys for Englewood and Central Colorado Power Co. concluded a four-day hearing. Counsel for the power company argued, among other points, that the contract is illegal because bidding was not competitive. On this angle, the court asserted:

"We note that the plans and specifications for the work were prepared by the successful bidder (Municipal Power Development Co.); that it promoted this scheme to put the city into the light and water business without risking its own capital. Such a set-up, while not illegal, perhaps, will be carefully scrutinized—a great deal is to be said for the charge that the defendant company thereby obtained an unconscionable advantage as a bidder."

Evidence showed that, after preliminary surveys were prepared by the Minneapolis concern, bids were advertised for on a basis of "sketchy and incomplete" specifications during a period of twelve days—a period insufficient, in the court's opinion, for reliable estimates to be prepared by reputable bidders. "According to uncontradicted evidence, it was impossible for prospective bidders to obtain necessary data required by the plans and specifications, or rather lack of them, within the twelve days allowed."

The City of Englewood contended that it did not have to comply with competitive bidding requirements since the plant was to be built with revenue bonds instead of by general taxation. On this point Judge Symes wrote:

"Englewood has plenary power to regulate the rates and services of the plaintiffs (Colorado Central Power Co.), so duplication of the plant is economic waste. Under this particular set-up, the citizens would be paying for the new electric plant after it becomes obsolete. In the end they pay the bill, whether it is financed by revenue bonds or taxes . . . . These so-called 'revenue bonds' may properly be described as an artifice or scheme to do that which the constitution declares to be against public policy. It should not be encouraged, especially at this time of depression, high taxes and public indebtedness."

Genealogy of ELECTRICAL WEST

IN 1887 there was founded in San Francisco *Pacific Lumberman, Contractor and Electrician*, the electrical department of which was edited by George P. Low. As electrical development in California progressed it was deemed advisable to divorce the electrical department from the parent publication. This was done in July, 1895, and the new paper was called *Electric Journal*, with Mr. Low as editor and publisher. To avoid confusion with *Electrical Journal* founded at about this time by the Westinghouse company in Pittsburgh, Pa., the name of the Pacific Coast paper was changed in September, 1895, to *Journal of Electricity*. The paper was brought out as a monthly under this title until July, 1899, when the name was changed to *Journal of Electricity, Power and Gas*. After the San Francisco fire of April, 1906, the Technical Publishing Co. was organized and publication was changed to weekly and continued so to January, 1917, when the schedule was changed to semi-monthly publication. On Jan. 1, 1919, the name was again changed, the paper reverting to the title, *Journal of Electricity*. In September, 1919, the paper was purchased from the Technical Publishing Co. by the McGraw-Hill Co. On Feb. 1, 1921, the McGraw-Hill Co. of California was organized and the name of the paper changed to *Journal of Electricity and Western Industry*. It was found advisable to revert to the title, *Journal of Electricity*, on July 1, 1923. On Jan. 1, 1927, the paper became ELECTRICAL WEST with a monthly publication schedule. The magazine has always been published in San Francisco.

Editorial policies of the paper, first as a department in *Pacific Lumberman, Contractor and Electrician*, and later as *Journal of Electricity*, were directed by George P. Low as editor until early in 1905. He was succeeded by C. L. Cory, dean of the College of Mechanics of the University of California, who held the position of editor until 1907. From 1907 until 1917 the paper was directed by A. H. Halloran as managing editor. In 1917 Robert Sibley became editor, a post he held until Aug. 1, 1922, when he was made editorial director. On Jan. 1, 1923, Charles T. Hutchinson became editorial director and acted in that capacity until his appointment as publishing director just before his death in February, 1930. George C. Tenney, managing editor of the paper from Jan. 1, 1923 until Jan. 1, 1930, was appointed editor on the latter date and has since been in full charge of the editorial policies of the publication. In addition the present editorial staff consists of W. A. Cyr, associate editor, C W. Leihy, associate editor, and R H. Flynn, assistant editor.

AS THIS issue goes to press, word has been received of the tragic death of C. J. Geisbush, Eastern sales manager of Electrical West. On New Year's Eve, while seated in the kitchen of his home in Jamaica, L.I., writing New Year's greetings to his many friends "out West," he was asphyxiated.

Nogales Seeks Municipal Plant as Fight Ends

Streets of Nogales, Ariz., darkened for two weeks because of a dispute between city officials and those of Public Utilities Consolidated Corp. over the refusal of the latter to pay certain license and franchise taxes, were lighted again as the power company paid, under protest, the disputed assessments. The city now is advertising for bids for equipment to operate its own electrical plant and has applied for a permit to manufacture and sell electrical energy.

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California Commission Asks New Financing

In its annual report, the California Railroad Commission summarizes its year's work, proposes new legislation and directs particular attention at a new plan for financing the activities of the commission. The plan involves an assessment upon the utilities rather than an appropriation from the general fund of the state. The work of the body requires about $500,000 per year.

Utility rates were cut by the commission by a total of $1,655,948 annually and increases allowed totalled $8,894. Some 47 electric utilities are under the jurisdiction of the commission.

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Work Begun on Colorado River Aqueduct

Orders to proceed at once with construction of Metropolitan Water District's power lines and substations have been received by the three companies holding the contract for the work; at least one construction crew will go to work on Jan. 3.

Just what terms had been made with labor officials who had started suit to block work pending adjustment of the wage scales were not announced, but the pay for electrical workers employed in the announced construction will be $7.20 a day.

News Shorts

¶ Shell Oil Co. will spend $8 millions this year for extension and improvement of producing, refining and distributing facilities on the Pacific Coast.

¶ R.F.C. will loan $1,621,000 to Seattle City Light to complete the City Light building and Diablo power house, but no funds for extension to distribution facilities in the city. J. D. Ross is negotiating with New York bankers for a $1,800,000 bond purchase to retire outstanding warrants.

¶ Hoover dam site has been moved 20-odd feet upstream to make room for bigger generators. Under the new plan, installed capacity of dam power plant will be 1,800,000 hp., instead of 1,200,000 hp. originally planned.

"Like a department store, where the public may compare and choose," San Francisco's civic auditorium was the scene of the home appliance exposition and likewise of the industry and sales meetings

Appliance Exposition, Sales Convention and Industry Meeting Make Four Days of History

INITIATING what to date is probably the greatest industry mobilization for a concerted sales attack on the electrical market in the face of discouraging economic conditions, R. E. Fisher, vice-president in charge of public relations and sales, and his staff headed by H. M. Crawford, general commercial manager, Pacific Gas and Electric Co., staged four days of war council for the electrical industry which presages carrying the economic battle into the enemy camp during 1933.

First there was a four day home appliance exposition of magnitude directed at the consuming public Dec. 13-16. Next was a call to arms of the company's own sales and executive forces. Then there came a mobilization of the electrical industry to extraordinary selling effort. Following this and radiating from headquarters, is the organization of forces on every community front in a series of sales staff and employee meetings, and local expositions.

Appliance Exposition Unique

Arranged in groupings, attractively displayed, practically all kinds and makes of electric home appliances were available for comparison and view at the home appliance exposition, held in the San Francisco Civic Auditorium.

"The effect we have tried to gain," said Frank Bevan, display manager who designed the exhibition, "is that of a big department store, where the public may come and see and choose." This effect was well achieved.

P. G. and E. Sales Convention

Drawn into San Francisco for a concentrated day's session, some 500 salesmen, sales supervisors, sales and division managers, division superintendents, chief clerks and other division and district headquarters staff of the company's 77 offices, were given a strong dose of sales stamina and a staunch commercial program for the year 1933, Thursday, Dec. 15. After opening the meeting Harry Carroll, electric sales manager, adjourned the meeting to allow all of the visiting men to spend the morning with the manufacturers' representatives in going over all of the appliances on display at the exposition.

The afternoon session opened with a message from A. F. Hockenbeamer, president, read by Ray Beckett, assistant to the president, telling plainly "why" the company was going to make the great drive of its career for business in 1933, both to retain existing loads and to regain lost load. Then with Frank Bevan as extrepreneur, the "what" of the company's program was outlined in its agricultural phases by A. M. Frost, manager agricultural sales; in its commercial phases, by G. Hill; in its industrial phases by W. H. Park; in its domestic phases by E. F. Perkins. Al C. Joy, director of advertising, pledged the company's $400,000 advertising program for 1933 to be devoted chiefly to the commercial program of the company.

In telling "who" was going to carry on this program H. M. Crawford said the company looked to its salesmen, to dealers, and to its employees. Particularly forceful was the point made that in 1932 sales prospects turned in by employees had resulted in work for fellow employees representing an added $114,000 payroll, or equivalent to 2 months continuous employment for 500 people. R. E. Fisher closed the meeting by directing division managers to hold in their own divisions first a meeting of their sales staffs, next an appliance display, and finally an employee meeting.

Presiding at a special dinner given by Mr. Hockenbeamer to all salesmen having made 100 per cent of their quota, Mr. Fisher announced a 97 per cent overall electrical sales accomplishment as against 1932 quotas. P. M.Downing, general manager, in rededicating the company to put every resource behind the sales department in 1933, made no secret of the difficulty of the task ahead, but urged every salesmen to become a lieutenant, a leader in the electrical industry in his community to keep the industry advancing. Mr. Hockenbeamer presented his annual sales trophy, a painting, to the San Francisco division through Harry Bostwick, division manager, and ended with a significant fact. In 1921, he showed average consumption was 500 kw.-hr. and the rate 7 cents. In 1932 the consumption average is 900 kw.-hr. with the rate 4 cents. "Such figures show pretty plainly that we have worked during these years solely for the benefit of our consumers, which is a good thing. Our rates are lowest of any in the United States here in the West. But we must start to work for the good of the company too." He also showed that every new installation, every new load, helps to maintain the community, a social factor of importance in these days.

Industry Dinner Culminates

Under the auspices of the Pacific Coast Electrical Bureau an all industry annual get-together dinner was held Friday evening at the close of the exposition. George C. Tenney, editor Electrical West, presided. Carl Swigert, trade relations representative, P. C. E. B., outlined the Bureau's program and declared that the strength and safety of the industry is the measure of its ability to adjust differences and misunderstandings without commotion. He proposed a new slogan, "Faith, Hope and Harmony, and the Greatest of these is Harmony."

H. M. Crawford next presented a careful and convincing review of potential markets in the area, and the company's plans for a cooperative development of these markets. Much of this data will be detailed in the February issue of this magazine. Closing the meeting was G. W. Davis, of Davis-Skaggs Co., who made a clear analytical picture of the forces of de-

pression and who answered the blind cry, "why doesn't somebody do something?" with factual evidence that the government and great corporations are doing something and that when more people individually do likewise they will find the way up and out.

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WESTERN CONFERENCE ON AIR CONDITIONING—Two days of sessions, one at the University of California at Berkeley, the second at the civic auditorium, San Francisco; a program of both theoretical and practical discussion of air conditioning matters; a display of pictures and literature on the subject—these are planned in a Western Conference on Air Conditioning sponsored by the San Francisco Section, A.S.M.E. and other engineering bodies. Dr. B. M. Woods, U. of C., is general chairman. Carl A. Rietz, Westco-Chippewa Pump Sales Co. is chairman of arrangements, and S. R. Dows, W. H. Picard Inc., chairman of publicity and displays.

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California C.R.E.A. 1933 Plans Approved

Plans for 1933 were outlined and approved at a meeting of the California Committee on the Relation of Electricity to Agriculture, at Davis, Nov. 30, 1932. Progress reports were made on projects under way during the last year.

Studies will be continued on soil heating, fruit juice sterilization, reaction of insects to light, air conditioning for rural homes, hay chopping and electric brooding, with special reference to chick metabolism. The rural electric short course also will be conducted in 1933.

Soil heating experiments will be conducted with flowers and cuttings with special attention to Spanish iris. On fruit juice sterilization work will be continued on studies using 60-cycle current at ordinary voltages, with which a kill of yeast cells of 99.999 per cent has been achieved, and will be extended to include high frequency current, ultra violet rays and X-rays. Additional field experiments will be conducted with the light trap developed by Prof. W. B. Herms and Joe Elsworth. Further experiments will also be conducted on the reaction of insects to monochromatic light.

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Additions to P.C.E.A. Committee Lists

Additions to the committee personnel of the P.C.E.A. and errors discovered after the publication of the list in EWEST of Dec. 1, 1932, include the following:

The general power committee, under the general power bureau of the Commercial Section, is composed of: George H. Hawley, chairman, Southern California Edison Co.; E. M. Ellis, General Electric Co.; H. S. Warren, Westinghouse Electric & Mfg. Co.; W. R. Chawner, The Southern Sierras Power Co.; Jack Wells, Los Angeles Gas and Electric Corp.; C. L. Ashley, Southern California Edison Co.; W. E. Thomson, Southern California Edison Co.; P. P. Pine, San Diego Consolidated Gas & Electric Co.; C. H. Brunner, Westinghouse Electric & Mfg. Co.; M. Rhine, General Electric Co.; J. P. McElroy, San Joaquin Light & Power Corp.; and Frank Talcott, Pacific Gas and Electric Co.

In the Purchasing and Stores Section, additional committees include:

Stencil Machines for Stores Use Subcommittee—H. E. Cox, chairman, Southern California Edison Co.; F. Kraut, Pacific Gas and Electric Co.; C. B. Lore, The Southern Sierras Power Co.; and R. E. Fritzer, San Diego Consolidated Gas & Electric Co.

Cost of Stores Operation Subcommittee—R. O. Cross, chairman, Southern California Edison Co.; G. H. Grummett, San Joaquin Light & Power Corp.; W. J. McCullough, Southern California Edison Co.; W. deWaard, San Diego Consolidated Gas & Electric Co.; and W. Maddock, Los Angeles Gas and Electric Corp.

Sub Stores Accounting Methods Subcommittee—J. K. Uhler, chairman, So. California Edison Co.; A. A. Charronat, Pacific Gas and Electric Co.; R. O. Cross, Southern California Edison Co.; G. N. Riblet and/or J. C. Anderson, San Diego Consolidated Gas & Electric Co.; and M. A. McMillan, Los Angeles Gas and Electric Corp.

Standardization and Simplification Committee—E. A. Long, chairman, Pacific Gas and Electric Co.; A. J. Scott, The Southern Sierras Power Co.; E. A. Bullard, Los Angeles Gas and Electric Corp.; G. M. Richardson, Southern California Edison Co.; H. H. Scoville, Pacific Gas and Electric Co.; and W. deWaard, San Diego Consolidated Gas & Electric Co.

Additions to committee lists are: G. H. P. Dellman, San Diego Consolidated Gas & Electric Co., home lighting committee, lighting bureau, Commercial Section; A. D. Irion, Southern California Edison Co., and C. B. Judson, Los Angeles Gas and Electric Corp., accident prevention committee, Engineering Section; W. C. Curl, Southern California Edison Co., subcommittee on corrosion of lead, its causes and remedies, underground systems committee, Engineering Section; C. E. Young, Pacific Gas and Electric Co., distribution economics and construction subcommittee, overhead systems committee, Engineering Section; and J. G. Monahan and L. A. Nott, Sangamo Electric Co., meter committee, Engineering Section.

Inadvertently, the general committee of the underground systems committee, Engineering Section, was placed under the meter committee, same section.

Several changes in the prime movers committee, Engineering Section, have been made by the chairman, and the revised committee is listed here:

PRIME MOVERS COMMITTEE

V. F. Estcourt, P. G. and E. Co., chairman.
C. W. Wiggins, San Diego Cons. G. & E. Co., vice-chairman.

Review Subcommittee

C. W. Wiggins, San Diego Cons. G. & E. Co., chairman.
Born, M. R., P. G. and E. Co.
Johnson, V. E., So. Sierras P. Co.
Knight, F. R., L. A. G. and E. Corp.
Kraps, L. J., So. Calif. Ed. Co. Ltd.
Steinbeck, C. E., P. G. and E. Co.

Condensers and Auxiliaries Subcommittee

D. P. Wooley, So. Calif. Ed. Co., chairman.
Knight, F. R., L. A. G. and E. Corp.
Major, R. V., San Diego Cons. G. & E. Co.
Mulkey, M. E., P. G. and E. Co.
Spear, R. D., Foster Wheeler Corp.
Williams, S. L., P. G. and E. Co.

Heat Balance, Design and Plant Betterment Subcommittee

J. M. Renfrew, P. G. and E. Co., chairman.
Born, M. R., P. G. and E. Co.
Hicks, L. A., Hawaiian Elec. Co.
Noble, H. A., San Diego Cons. G. & E. Co.
Powell, R. C., P. G. and E. Co.

Instruments, Automatic Control and Plant Records Subcommittee

J. T. Youd, P. G. and E. Co., chairman.
Bennett, H. C., So. Calif. Ed. Co. Ltd.
Cohn, N., Leeds & Northrup Co.
Major, R. V., San Diego Cons. G. & E. Co.
Markey, H. S., P. G. and E. Co.
Mulkey, M. E., P. G. and E. Co.
Rumble, V. A., Bailey Meter Co.
Shirley, H. T., San Joaquin L. & P. Corp.

Operating and Maintenance Practice Subcommittee

L. J. Kraps, So. Calif. Ed. Co., chairman.
Born, M. R., P. G. and E. Co.
Gordon, G. K., So. Calif. Ed. Co. Ltd.
MacDonald, E. G., So. Calif. Ed. Co.
Markey, H. S., P. G. and E. Co.
Mulkey, M. E., P. G. and E. Co.
Meudell, A. Y., San Joaquin L. & P. Corp.
Person, P. A., P. G. and E. Co.
Thomas, R. J., Hawaiian Elec. Co.
Zeise, C. H., L. A. G. and E. Corp.

Plant Management Subcommittee

F. G. Philo, So. Calif. Ed. Co. Ltd., chairman.
Burlingame, L. D., P. G. and E. Co.
Hicks, L. A., Hawaiian Elec. Co.
Johnson, V. E., So. Sierras P. Co.
Knight, F. R., L. A. G. and E. Corp.
Noble, H. A., San Diego Cons. G. & E. Co.
Quinn, E. A., San Joaquin L. & P. Corp.
Renfrew, J. M., P. G. and E. Co.

Round Table Subcommittee A

C. E Steinbeck, P. G. and E. Co., chairman.
F. R. Knight, L. A. G. and E. Corp., co-chairman.
Brunner, C. H., Westinghouse E. & M. Co.
Chapman, P. E., P. G. and E. Co.
Day, W. P., So. Calif. Ed. Co.
Delany, C. H., P. G. and E. Co.
Dodds, J., General Electric Co.
Ingraham, A. K., P. G. and E. Co.
Johnson, V. E., So. Sierras P. Co.
Mosher, H. N., P. G. and E. Co.
Munro, W. N., P. G. and E. Co.
Noble, H. A., San Diego Cons. G. & E. Co.
Short, W. H., So. Calif. Ed. Co.
Stillwagon, F. B., P. G. and E. Co.
Thomas, R. J., Hawaiian Elec. Co.
Vail, D. P., C. C. Moore & Co.
Valk, E. E., General Electric Co.
Wallingford, R. A., So. Calif. Ed. Co.

Round Table Subcommittee B

A. Sattler, So. Calif. Ed. Co., chairman.
Jones, F. C., P. G. and E. Co.
Major, R. V., San Diego Cons. G. & E. Co.
Mulkey, M. E., P. G. and E. Co.
Munro, N. R., P. G. and E. Co.
Poe, W. C., L. A. G. and E. Corp.
Shirley, H. T., San Joaquin L. & P. Corp.

Personals

"Bill" Berry Answers The Last Call

IT was as though Death had called repeatedly, for the past two years, but each time "Bill" Berry answered, "Wait a bit. I still have something more to do." But Death is impatient; and on December 2, just a year from the day he had received a previous call, "Bill" went cheerfully, albeit reluctantly. With him went a Graybar tradition, for William Shelby Berry had been for years manager of the San Francisco office of Graybar Electric Co.

"Honesty is the only thing, the only thing;"—he was repeating the precept of his life—"honesty to yourself, honesty to your colleagues." Honesty was a thought that he lived every day of his life, as far back as anyone can remember. It was the principle that he sought to instill into "his boys," men in every branch of the electrical industry whom he fathered and guided as he would his own sons. If he sought to stay the time of his going, it was because he felt that the industry needed more than ever to be reminded of the bed-rock soundness of the simple principle, needed to awaken in younger men the same staunchness of heart, honesty and fair dealing that had proved so notably worth-while in his own life.

Born in Louisville, Ky., in 1867, William Berry grew to be 6 ft., 4 in. in height. Kentuckian, he seemed to dominate meetings more by a quiet dignity than by compelling personality. When he spoke it was with almost legalistic carefulness, deliberately and specifically, calm but intense in sincerity. To a large circle of friends he was loyal to the point of his own danger, especially during the last two years of his illness.

Of two things Mr. Berry was particularly proud. When the Chicago World's Fair of 1893 came, he was placed in charge of the electrical exhibit by the Thomson-Houston Electric Co., which he had joined in 1887. It was the world's finest electrical display at the time, even though its chief feature was a column festooned with electric lights in colors and controlled by one of the first flashers; but it initiated the era of electrification which has followed that fair. Of his part Mr. Berry was justifiably proud.

He remained with the Thomson-Houston company through its merger with Edison Electric to form General Electric Co., in 1894, and then became operating engineer and superintendent of construction for Consolidated Traction Co., of Pittsburgh, Pa., where he guided the conversion of three traction roads from cable to current.

In 1904 he joined the New York staff of Western Electric Co., going to Cincinnati in 1907 as branch manager. In 1908 he came to San Francisco as sales manager of that office, a few years later advancing to the post of branch manager, a position he held until three years ago.

It was during his San Francisco service that Mr. Berry had his second proud day; he was awarded the certificate of honorable mention under the James H. McGraw Award of 1926, "in recognition of his splended record of constructive contribution to the wholesaling branch of the electrical industry." Further, the citation read:

"He has been an outstanding leader in cooperative work. He has served the Pacific Division of the Wholesalers' Association as chairman and in every capacity on committees. He was a large factor in developing the California Electrical Cooperative Campaign and the California Electrical Bureau. He was a member of the advisory committee in the promotion of the convenience outlet, the electrical home and the Red Seal campaigns. He was one of the early presidents of the San Francisco Electrical Development League in the days when the league was languishing for lack of interest, and he contributed largely to bringing about its present position of importance. He has taken a broad, constructive interest in the welfare of the electrical contractor and has worked indefatigably to promote contractor's organizations and to awaken them to a full responsibility of their relations with the other branches of the industry. In a word, the name of William S. Berry has become inseparably identified with the growth of the electrical industry in all its phases throughout the entire Pacific Coast."

Three years ago Mr. Berry was made assistant Pacific Division manager for Graybar and, although eligible for retirement last January, he remained active until the last.

Funeral arrangements were made by one of his "boys," A. H. Nicoll, present San Francisco manager for Graybar; because of lack of time only short notice was given the industry, but a host of "Bill" Berry's personal friends were on hand for the funeral rites.

WILLIAM S. BERRY

ALBERT G. CAGE

R. B. BONNEY

Albert Cage Advanced by Southern Sierras Company

ALBERT G. CAGE has been appointed assistant general manager of The Southern Sierras Power Co., The Nevada-California Power Co., and Yuma Utilities Co., it was announced last month by F. O. Dolson, vice-president and general manager of the companies, bringing Mr. Cage an advancement from his present position of manager of the rate department of the Southern Sierras company.

Mr. Cage became a member of the Southern Sierras engineering department in 1914, immediately after his graduation from Stanford University. He was transferred to the commercial department the same year, remaining until the war. After the armistice he again was employed, leaving in 1921 for 18 months as assistant engineer in the gas and electric department of the California Railroad Commission. He was appointed assistant general agent of the power company in 1922, and was promoted to manager of the rate department in January of last year.

Mr. Cage is prominent in civic affairs of Riverside, headquarters of the company, and has served as president of the chamber of commerce and many of the civic committees.

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Bonney, Sorensen Nominated As A.I.E.E. Vice-Presidents

R. B. BONNEY, Mountain States Telephone & Telegraph Co., past-chairman of the Denver Section, and Prof. R. W. Sorensen, California Institute of Technology, Pasadena, have been nominated as vice-presidents of American Institute of Electrical Engineers, to take office in August, 1933. John B. Whitehead, John Hopkins University, Baltimore, Md., was nominated for the presidency.

Nomination is tantamount to election by the members of the Institute when they vote by mail in the spring.

Mr. Bonney will succeed C. R. Higson, Utah Power & Light Co. in district 6, and Professor Sorensen succeeds A. W.

THOMAS P. McCREA

SAMUEL C. HAVER

G. ROSS HENNINGER

Copley, Westinghouse Electric & Mfg. Co., in district 8. H. V. Carpenter, Washington State College, Pullman, Wash., remains as vice-president from district 9 for another year.

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Death Takes T. P. McCrea, Former Utility Officer

THOMAS PLEASANTS McCREA, former secretary of Los Angeles Gas and Electric Corp., died on Nov. 25 at home in Brentwood Heights, Los Angeles suburb.

Born in Wilmington, Calif., in 1871, he became accountant for the utility in 1893, remaining in its employ for 35 years, until his retirement in 1928. During his service he advanced from accountant to auditor, purchasing agent, assistant secretary, becoming secretary in 1916. He also became a director in 1920.

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SAN JOAQUIN Light & Power Corp. employee association elections resulted in the selection of R. O. Martin as president of the Fresno club, John Ware as president of the Bakersfield club, Earl Roberts as president of the San Luis Obispo group, and Paul E. King as head of the Coalinga chapter.

A. N. KEMP, executive vice-president of California Bank, Los Angeles, and formerly vice-president in charge of finance, Southern California Edison Co. Ltd., has been named to the management committee of the power company. The new appointee is a member of the directorate and also of the executive committee of the company.

DR. WILLIS RODNEY WHITNEY, organizer and for 32 years director of General Electric research laboratories, retired from that position on Nov. 1, to be succeeded by Dr. William D. Coolidge, senior associate director of the laboratories. Dr. Whitney continues as vice-president in general charge of research.

Samuel Haver Slain In Office

SAMUEL C. HAVER, manager of the personnel division, Southern California Edison Co. Ltd., was shot and killed in his office on Dec. 12 by Karl Tatosian, former Edison employee, who took his own life after he had terrorized surrounding offices with wild shooting.

The former employee, engaged at one time in the construction department, had been a frequent caller at Mr. Haver's office and a record of letters indicated that he had frequently been befriended by personal loans and gifts by the executive.

Mr. Haver was 49 years of age and had entered the service of the Edison company in 1909. He left for the war, attaining a rank of major, returning to the utility as superintendent of employment. In 1930 he was made personnel manager for the company.

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HARRY L. HARPER, Pacific district manager for Graybar Electric Co., has been named first vice-president of the Los Angeles Chamber of Commerce as a climax to years of civic prominence.

J. S. WATSON has been appointed branch manager for the B.C. Electric Railway Co.'s showroom at New Westminster, B.C. Announcement to this effect was made recently by W. G. Mainwaring, merchandising manager for the B.C. Electric. Mr. Watson is well known in the electrical business in British Columbia, having been associated with the Mott Watson Electric Co., New Westminster, for a number of years.

W. P. WILLIMOTT has been appointed purchasing agent for the City of Los Angeles, it was announced during December by Mayor Porter, to succeed the late Thomas Oughton, who held the post for the last sixteen years, passing away in November. A. J. Holm, assistant purchasing agent and head of the department since the death of Mr. Oughton, will be returned to his post as assistant.

G. Ross Henninger Named A.I.E.E. Editor

COINCIDENT with the announcement that Henry H. Henline, since June 1, 1932, acting national secretary, has been appointed national secretary of the American Institute of Electrical Engineers, comes word that G. Ross Henninger, associate editor of the institute since October, 1930, has been named editor upon the retirement of George R. Metcalfe. Mr. Metcalfe had been editor since 1910.

Mr. Henninger is a familiar figure in the industry in the West; for years, until his appointment as associate editor of the institute, he had been engineering editor of ELECTRICAL WEST. Previous to that he had been a member of the engineering staff of Southern California Edison Co. Ltd.

He will have responsible charge of the institute's editorial staff and its technical publications, under the direction of the publication committee.

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McGraw Award Goes to Philadelphia Official

Horace P. Liversidge, vice-president and general manager, Philadelphia Electric Co., and president of the Electrical Association of Philadelphia, has been awarded the 1932 James H. McGraw medal and purse for cooperation. This is in recognition of his contribution to the advancement of cooperation in the electrical industry by his leadership in Philadelphia in the development of a practical coordination between electrical men for the improvement of business standards and the promotion of the market, and by the influence of his work for tolerance and harmony of purpose in the national policies of the industry.

"His achievement," the citation reads in part, "has been the more notable because, out of a technical training and an operating experience in power company engineering and administration, he has become the outstanding exponent of a practical coordination in sales policies and the trade relationships between the five branches of the electrical industry, not in his own community alone, but nationally."

Obituary

B. G. McBRIDE, president of Elko-Lamoille Power Co., Elko, Nevada, died on Dec. 7 from a self-inflicted gunshot wound. Associates attributed the death to nervous breakdown, brought on by overwork in connection with power rate suits.

BENJAMIN BURGESS, veteran construction foreman for The Southern Sierras Power Co., died on Nov. 27. He suffered a paralytic stroke on June 1, had been on the disabled list since then.

Contractor Dealer Inspector

Electragists Adopt New Program

A fourteen-point program was enunciated by the Electrical Contractors' Association of Northern California at the special meeting held in Oakland, Calif., December 8, to reorganize the Northern Chapter of California Electragists in conformity with the new national set-up and name. The meeting was presided over by Edward Martin, secretary, in the absence of Lloyd Flatland, president. Resolutions were adopted in support of the California Contractors' License Law as now in force in a defense against an attack being made upon the law by interests claiming that license fees are to be increased. The falsity of these claims was demonstrated by authenticated reports from Sacramento members that the State Department of Vocational Standards intends to reduce the license fee next year to $7.50 instead of the present $10. Another resolution was passed urging reinspection by all city electrical departments. Another resolution was passed extending sympathy to the family and business associates of William S. Berry, who passed away recently (See page 33).

The fourteen-point program in four of its points definitely calls upon the contractors to constructive action in their own betterment. In five points it urges manufacturers to entertain a new concept as to distribution. In two points it likewise urges wholesalers to revise distribution concepts. In two points it asks central stations to make practices fit better with head office policy, and the final point is directed to the industry at large through the Pacific Coast Electrical Bureau. Full text of the program will be published later.

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Propose Registration Of Inspectors

A move to place registration of building, electrical, plumbing and other similar inspectors under the department of professional and vocational standards of the State of California, in a similar manner to the registration of physicians, engineers and contractors, initiated by the Pacific Coast Building Officials Conference, was brought up for discussion at the last meeting of the Southern California Chapter, Southwestern Section, International Association of Electrical Inspectors. The intent is to require certain standards of proficiency for registration similar to existing requirements for civil engineers. After much discussion a committee consisting of Arthur Kempston, R. H. Manahan, Fred Vore and Arthur C. Veit was named to study the matter.

Fred Vore, city electrician, Pasadena, was elected president of the chapter and Theodore C. Combs, secretary-treasurer.

Other subjects discussed at the meeting were defective devices and inspectors problems (a feature which is to be followed in future meetings), Electrotrim standards and installation requirements, thin wall flexible steel conduit, and the theft-proof meter being adopted by the Southern California Edison Co.

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A-1 VACUUM CLEANER SHOP, specialist in sales and servicing of vacuum cleaners of all makes, has taken a new location at 136 N. Market St., Inglewood, Calif. R. E. Davis is proprietor of this concern.

T. W. C. HAWKINS, an electrical dealer in Victoria, partner in the firm of Hawkins & Hayward, now is president of the British Columbia Agricultural Association, which sponsors the annual Provincial Fair in Victoria.

PAARMANN ELECTRIC CO. recently moved from East 4th St. into new quarters at 1029 Boyle Ave., Los Angeles. Mr. Paarmann specializes in motor and industrial installations, while the contracting department is handled by D. R. Ashley. The shop specializes in both industrial and construction.

BEACON ELECTRIC CO., a contracting and engineering firm operated by Sam V. Weimer, now is at 506 13th St., San Diego, Calif., in the same building as the San Diego Elevator & Electric Co. The latter, specialists in elevator maintenance, formerly were maintained by the Consolidated Steel Co., Elevator Department.

VALLEY ELECTRIC CO. is a newly-opened electric shop specializing in maintenance, repair and sales of vacuum cleaners, located at 228 West Valley Blvd., Pomona, Calif.

B. R. COUPLAND has opened an electrical motor repair shop at 4229 Whittier Blvd., Los Angeles. Motor service, as well as general electrical service and engineering, is to be featured.

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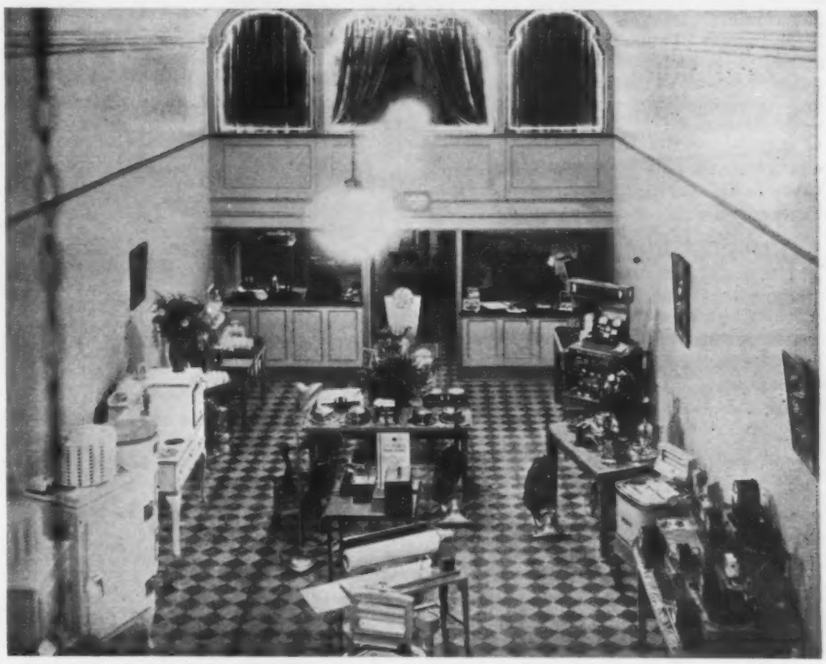
Santa Cruz Dealers Realign



A CHANGE of considerable significance in the electrical lineup has taken place in the city of Santa Cruz, Calif., in the formation of the Star Electric Co., at 122 Pacific Ave. John Holt, pioneer electrical contractor in Santa Cruz, has given up the establishment under his own name and joined with Frank Carroll, formerly of Carroll-Searles, and Ed Johnston, Edward Meehan and Sherwin Ellingson. The new company is the authorized General Electric home appliance dealer for the Santa Cruz area. It specializes in electrical appliances under the full General Electric franchised dealer plan. Four new, especially-designed and attractively-painted trucks operate to distribute appliances in that territory. Mr. Searles has taken over the two contracting stores of the Carroll-Searles Co., one at Pacific Grove and the other at Santa Cruz. The Pacific Grove store has been moved to a new location on Lighthouse Ave., nearer to Monterey.

Motor Dealers Reelect Adams President

Horace Adams, proprietor of Farnsworth Electric Co., San Francisco, seems to have a permanent post as president of the San Francisco Motor Dealers Association, just having been reelected to the office for the fifth time. So well informed is Mr. Adams on Robert's rules of order that the small motor group feel they have their affairs in expert hands when Mr. Adams presides.

James Powers, Enterprise Electric Works, was named vice-president and Keith Noble, of Buzzell Electric Works, who, like Mr. Adams, has held the office of secretary and treasurer since the organization was formed, was again reelected. The annual meeting was held Dec. 1. The organization was shown to be in excellent condition and to have made material progress in the stabilizing of motor conditions in the area.

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HOME ELECTRIC SERVICE, Ltd., which opened a shop recently in the Kerrisdale suburb of Vancouver, B. C., has moved to larger premises at 2134 West 41st Ave. J. L. Wood, president, and John S. Pearce, general manager, and A. Coombs in charge of the service and repair department, operate the business which includes electrical appliances, radio and contracting and repair work.

BAEHR Electric Shop has completed a contract with Deer Lodge, Mont., changing 62 lamp posts from the three-lamp cluster to single-lamp type. The contract included rewiring.

THE ELECTRIC SHOP of Santa Maria, Calif., of which Bert Ford for many years has been proprietor, has recently become the G.E. authorized dealer for that territory and moved to 116 E. Church St. R. E. McCabe, with the Midland Counties Public Service Co. before the war, has become associated with Mr. Ford in the new store. The new arrangement allows Mr. Ford to devote his energies to the wiring and repair end of the business, with Mr. McCabe specializing in the merchandising end of the store. Pitts Elmore is salesman for the company. Among recent wiring jobs of The Electric Shop has been St. Peters Episcopal Church in Santa Maria.

NELS HOPE, for the past two years with the Pacific Gas and Electric Co. lighting sales department, has returned to the California Electrical Construction Co., San Francisco, with which he was formerly associated, to become lighting sales engineer and estimator.

DIETRICH'S ELECTRIC SHOP, formerly on Kalmia St. in Escondido, Calif., has moved to 121 W. Grand Ave. The new store was recently purchased by E. H. Dietrich, proprietor, in order to provide a permanent and larger display space.

Contractors Combine to Get Aqueduct Contract

LEFT to right: J. O. Case, Quality Electric Co. Ltd.; Glen Arbogast, Newbery Electric Corp.; and H. H. Walker, H. H. Walker, Inc.; three Los Angeles contractors who combined forces to secure a sizable electrical contract from Metropolitan Water District (EWEST, Dec. 1, 1932, p. 246).

Under the agreement, Quality Electric Co. will build the substations, Newbery Electric Corp. the transmission line and H. H. Walker will handle purchasing, accounting and payroll. They have agreed to complete the power line and substations within 60 days so that the tunnel contractor, Metropolitan Eng. Corp., can begin work on the San Jacinto bore. This will give employment to from three to five thousand men.

Metropolitan Eng. Corp., a Los Angeles group, was lowest of eight bidders on the tunnel contract, with $7,333,315, less than $6,000 below the next bidder. Other recent contracts include: General Electric Co., fifteen 2,000-kva. transformers, $99,210; Allis-Chalmers Mfg. Co., 45 333-kva. transformers, $63,090; General Electric Co., 24 250-kva. transformers, $30,240; Westinghouse Electric & Mfg. Co., three 5,000-kva. synchronous condensers, $100,470; Kelman Electric & Mfg. Co., 77 oil circuit breakers, $64,000.

Reconstruction Finance Corp., the only bidder, purchased $2,016,000 worth of 5 per cent district bonds during the month, enough to last the district about 90 days, it was estimated.

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MAYWOOD RADIO AND ELECTRIC SHOP was recently opened at 3515 Slauson Ave., Maywood, Calif., by L. H. Harlow. Manufacture of special electrical equipment, as well as radio and general electrical service, is contemplated.

W. T. DRURY, Electragist, Bakersfield, Calif., has completed the wiring of the new Kern County Tuberculosis "Stoney Brook Retreat" at Keene. The building is a new 24-bed addition to the former hospital. Wiring installation includes newest nurse-call system in addition to lighting and power.

J. H. SIMON, formerly with Finkner & Simon, has opened a new electrical and machine shop specializing in heating apparatus, thermostatic control and machine work at 670 Larkin St., San Francisco.

MAST RADIO CO., Inc., Seattle, has opened a store at 1531 Fourth Ave., with Fred R. Mast as president. The company will handle four complete lines, including radio, refrigerator, washing machines and oil burners. Service and parts division is to be opened at 2009 Fourth Ave.

ELECTRIC MOTOR & MACHINE CO., L. B. Frank, proprietor, recently moved from 407 Stockton St., San Francisco, around the corner to 282 Sutter St. and changed its name to the Frank Electric Co.

ACME ELECTRIC CO., an electrical contracting firm operated by Enos T. Pettit, has moved into an attractive new corner store location at 4481 El Cajon Ave., San Diego. Mr. Pettit equipped a truck with small necessities and tools for a portable shop which he takes to each job. Half of the store is to be occupied by C. D. Wiggins, who specializes in radio sales and service.

GILL ELECTRIC CO., newly-formed concern in San Diego, brings together a number of well-known electrical men in that city. The opening of its new store at 1227 4th St., on Nov. 1, provides facilities for a fixture display department, another for appliance display and, adjoining these, a large stock room and fixture manufacturing and appliance service and repair shop. The firm is operated by W. C. Gill, F. F. Southerland and M. E. C. Myers, the latter as sales manager and estimator.

Manufacturer Distributor

Oregon Distributors and Utilities Form Council

Electric Refrigeration & Cookery Council of Oregon is the name of a new distributor-utility cooperative organization formed in Portland last month. Thomas Lennard, of Ira F. Powers Co., is chairman, and Berkeley Snow, secretary of the Northwest Electric Light & Power Assn., is secretary-treasurer.

Membership in the council is restricted to distributors and manufacturers selling electric refrigerators and ranges in the Portland trade territory and to utility companies serving any part of this territory. There are fourteen distributor members representing nine refrigerators and eleven ranges. Six utility companies have joined. The principal object of the council is to tie in with the national promotional effort of the Electric Refrigeration Bureau and the Electric Cookery Council. The organization will undertake such cooperative promotional enterprises as it deems economically feasible and will foster the formation of local refrigeration bureaus and cookery councils throughout the state.

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General Electric Forms Own Finance Company

Organization of the General Electric Contracts Corp., to purchase from distributors and dealers installment payment obligations covering the sale of General Electric household appliances and other products, was announced in December by Gerard Swope, president of General Electric Co. The initial operation of the new corporation will be in the New York metropolitan area and will be extended to other cities as service and volume of business requires.

The Commercial Credit and other finance companies which have satisfactorily handled this business will continue to operate in all territories pending the opening of additional branches of the newly organized company.

G. F. Mosher, assistant treasurer of the General Electric Co., has been named president of the corporation, which will have its main office at 120 Broadway, New York City.

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W. E. SPRACKLING, vice-president in charge of sales, Anaconda Wire & Cable Co., spent several weeks visiting Western sales offices of the company, leaving Dec. 16 for the East.

ROY WILKINS, in order to pursue personal research work, has resigned from the engineering staff of Pacific Electric Mfg. Corp.

Walk-in Refrigerator

At the California State Fair, Sacramento, Calif., the first public appearance of the the new type of walk-in refrigerator box for farm use was made. It was built according to the specifications derived by the University of California farm school, at Davis, is powered with a Frigidaire unit, and contains an ice-making compartment, a food compartment and a large compartment for storing either meat or milk in cans. The box was made of redwood and insulated with redwood bark fiber. It was exhibited in a corner of the Pacific Gas and Electric Co.'s auditorium pergola at the fair

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IN TAKING OVER the distribution of Hotpoint ranges and General Electric refrigerators from Laidley Company, Portland, General Electric Supply Corp. was able to use the former members of the Laidley organization. C. W. Hartenfels will handle the detail of the range and refrigerator business for the entire Northwest in the Portland office. Ben Miller, Steve Brundidge and L. A. Iserman will specialize on the range and refrigerator business in Seattle, Spokane and Portland, respectively. In addition to these former employees of Laidley Company, Fred Block and R. A. Pearson, long-time employees of General Electric Supply Corp. in Seattle and Portland, respectively, also will devote their principal efforts to the range and refrigerator business in their territories.

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HERBERT J. MAYO, formerly with Garnett Young & Co., prior to that with General Cable Corp. and Benjamin Electric Mfg. Co., now is a member of the Los Angeles sales staff of H. B. Squires Co.

BIRKEL ELECTRIC SUPPLY CO., Seattle, plans to open a branch store at 530 Melrose Ave., in that city. Tentative plans provide for moving the main store to that location at a later date. C. H. Birkel is manager.

Cookery Council Offers Two Additional Prizes

Among the 1933 prize announcements of National Electric Light Assn. are two awards of special interest to merchandisers of electric ranges: the George A. Hughes and the A. J. Lindemann prizes.

The first, named for the president of Edison General Electric Appliance Co. Inc., consists of a cup and $1,000 and is to be given to the operating utility company and individuals in the company whose work and cooperative efforts show the greatest contribution to the development of the domestic electric cooking load, through promotion, selling, or both, during any calendar year. Among the factors considered will be: highest percentage of electric ranges connected in proportion to number of wired homes not using them. Replacements will be considered. Creative sales and advertising plans and the effectiveness of cooperation with agencies outside the merchandise department of the utility will play a part in the final award. The cup will go to the company, $500 to the commercial executive and $500 to be divided among salesmen and sales directors as the executive determines. In cases the prize-winning utility does not actually sell ranges, the latter $500 is to be distributed to outside agencies.

The Lindemann award, named for the vice-president and general manager of A. J. Lindemann & Hoverson Co., embodies cash prizes of $150, $100 and $50 for the most meritorious papers by utility employees on the advantages of electric cookery. Essays should be limited to 1,000 words.

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G. S. THURMAN, general manager, Fireproof Wall Co., Oakland, has appointed W. R. Hendry Co., Seattle, as Washington and Oregon representative for the line of underground conduit.

RUBIN BROWN has opened an electrical jobbing house, the Brown Wholesale Electric Co., at 314 E. Third St., Los Angeles. He will carry a complete line of illuminating glassware, lighting fixture parts and electrical supplies.

HOME ELECTRIC CO., Tacoma, Wash., has leased an office and warehouse location at 818 First Ave. So., Seattle, as a branch office. The firm has been appointed distributor in western Washington and Alaska for the radio line of Columbia Phonograph Co. L. D. Marsh, for years manager of the Columbia branch in Seattle, has been named manager of the new Home Electric branch.

HEXACON Electric Appliance Co., Roselle Park, N.J., has announced the appointment of Claude A. Pearson, San Francisco, as Pacific Coast representative for its line of electric soldering irons.

A. H. Jaeger Joins Staff of Electric Cookery Council

A. H. Jaeger, new field representative for the National Electric Cookery Council, started in the electrical specialty jobbing field in Seattle, joining the Hotpoint Electric Heating Co. in 1916 as its first range specialist. Later he became manager of Edison General Electric Appliance Co.'s appliance division. In 1926 he became vice-president in charge of sales for Leonard Refrigerator Co., leaving in 1931 to organize sales and distribution for Electromaster, Inc.

During the past ten years he has been active in organization work as president of the Chicago Sales Managers' Club; member of N.E.L.A. refrigeration committee; chairman of executive committee, National Refrigerator Manufacturers' Assn.; and chairman of standardization committee, of the same organization.

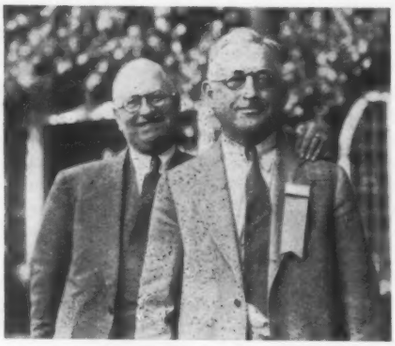
▼

MURRAY J. WHITFIELD, sales manager, Steel & Tubes, Inc., Cleveland, spent two December weeks on the Pacific Coast visiting company representatives: Herbert H. Benfield, San Francisco; Kenneth Anderson, Los Angeles; and H. H. Walker, Seattle.

▼

Who's Who

J. P. Robinson, Pacific Coast manager, Kerite Insulated Wire & Cable Co.; and "Bill" Frampton, superintendent of tests, Southern California Edison Co., Ltd.



A. F. Blecksmith, California manager, Duncan Electrical Mfg. Co.; and F. A. Redding, chairman, P. C. E. A. meter committee, Southern California Edison Co., Ltd.

A Standout

Sterling Electric Co., Sacramento, Calif., believes in advertising to the extent, that, per square foot, the facade of its building contains more lighting than any other building in town. Jack Kohl, manager, is responsible for the 5-color neon job

▼

Women Push Electric Sales in Contest

Under the leadership of Miss Mildred Wolf, Southern Colorado Power Co., chairman of the women's committee, Rocky Mountain Division, N.E.L.A., women in the employ of N.E.L.A. member companies in the mountain states organized into groups to stimulate Yuletide sales of electrical appliances.

Credit points were given to committee members who urged and got friends to buy something electrical for Christmas: A cigarette lighter counted 5 points, an electric range 500. At the conclusion of the contest, winners received merchandise awards and a banquet will be given those groups which produced the greatest number of sales.

More than 50 per cent of sales reported during the first weeks of the campaign were made through department, music, hardware and electrical stores. No distinction was made in credits whether the sale was made from a utility sales floor or a dealer floor.

▼

J. P. CARSON, manager of the Spokane branch of Graybar Electric Co., has been appointed sales manager at Los Angeles, succeeding the late H. T. Simmons. Mr. Carson has been manager at Spokane since 1921 and has been with the company since 1910. V. E. McCain, sales manager at Tacoma, succeeds Mr. Carson as manager at Spokane. J. Reine takes Mr. Cain's place at Tacoma.

Finance Company Stages Contest for G.E.

Probably for the first time, a finance company, Commercial Credit Co, has staged a sales promotion contest for a client, General Electric Co. The finance firm handles deferred paper for the refrigeration department of the manufacturer, and conducted a two-weeks contest among salesmen of distributors throughout the country, the salesman with the best record in each distributorship to get $25.

In the West, winners were:

E. A. White, Jr., Pasadena branch, George Belsey Co., Los Angeles.

J. M. Phillips, Oakland branch, L. H. Bennett Co., Ltd., San Francisco.

C. E. Anderson, George T. Bauder Co., San Diego.

J. B. Davis, Valley Electrical Supply Co., Fresno, Calif.

Junius Tribe, Utah Power & Light Co., Ogden.

Fleming Dragoo, B. K. Sweeney, Inc., Denver.

Mr. Tribe is the winner of the 1932 General Electric refrigerator sales audition contest (EWEST, Sept. 1, p. 127).

▼

BEARDSLEY & WOLCOTT CO., since Jan. 1, have been represented on the Pacific Coast by Eckert-Lloyd Co., San Francisco and Los Angeles, and in Denver by Laughlin Sales Co.

REYNOLDS Wholesale Electric Co. is moving into its new store at 6561 So. Western Ave., Los Angeles. J. A. Reynolds is the manager.

Market Review

California and Intermountain —

The electrical fraternity faces the New Year with no illusions as to the quantity of new business nor the quality of competition in securing it. The high hopes of midyear and early fall faded out in an exceedingly poor closing quarter, and even the brisk holiday business came too late and was of too small a unit value to level off that valley.

Such gigantic individual projects as the Metropolitan Water District in the South and the two Bay Bridges in the San Francisco area promise much employment and a consequent retail leavening when they get under way in the early spring, though their electrical portion is a comparatively small part of their enormous total value.

All along the Pacific Coast, in fact, from the transformers, circuit breakers and other machinery required for the Puget Sound Navy Yard in the Northwest to the Federal buildings in Los Angeles, and including a $10,000 transmission system for the Yosemite Valley, U.S. Government construction will provide the bulk of the jobs in sight, because privately owned buildings and

apartments, and even school and other new municipal buildings are practically non-existent, except for some re-conditioning of older buildings of a substantial size.

Among the larger electrical jobs in sight are the San Francisco and San Jose post offices, the quarters and distribution system for the Marin bombing base, and a $240,000 installation at the Ft. Miley Hospital in San Francisco.

Bids for the 2nd unit of the Los Angeles Water Project are now being worked up. They cover 80 miles of 66,000-volt and 52 miles of 33,000-volt transmission line and 15 750- to 6,000-kva. substations, all for the Valverde and Coachella tunnel sections and the Hayfield reservoir. Individual orders are still being placed for the first or San Jacinto tunnel section, due to uncertainty on the method of construction. For example, the elaborate rubber covered wire needed for actual boring will run close to $60,000, all to be ripped out when the tunnel is completed, but if the contractor uses storage battery drills, the wire needed will hardly be over $10,000 in value.

Despite unseasonable warm weather for ⅔ of its duration, the Pacific Gas and Electric Company's heater campaign, aided by a freezing December, will run very close to its 6,000 heater quota, and the cooperating dealers did about equally well. A February range campaign for employee sales will precede the usual three months' range campaign beginning in April; the 1932 quota was practically attained.

Though official figures are not yet available, it is estimated that 1932 building construction ran about 55% less for Southern California and about 40% less for the Bay Area than 1931 figures, though San Francisco's November total ranked second only to New York for that month.

Industrial rewiring and overhauling is improving and the survey of the Industrial Rehabilitation in the Bay Area alone discloses the early spending of a million dollars among oil, steel, and canning plants.

Recent machinery orders include Westinghouse equipments for a gas-electric locomotive for a naval air base and for a gold-dredger shipped overseas, value $11,000 and $18,000 respectively, a 200-hp. motor value $2,500 for a cement plant, and a switchboard and lighting equipment value $4,500 for a highway tunnel in a U.S. National Park. Westinghouse reports $7,000 of motor and turbine driving equipment of the water feed pumps for the Honolulu steam plant and a $25,000 installation of switching auxiliary equipment for the same. General Electric reports a Honolulu sale of a 200-hp. motor value $2,500, and $5,000 of switch gear control.

Other industrial orders include $1,000 of turbine parts for an oil company, a 600-kva. G.E. turbine value $13,000, for a fertilizer firm, and an $8,000 switchboard and motor order for a manufacturer of pumping machinery.

Central station material, however, is very slow, being limited to a few cars of poles, arms and hardware. The outstanding order covers $6,000 of indirect feeder regulators for a central California distributing system.

Prices are again sliding, the recent advances in rubber covered wire and boxes, for example, having just been wiped out and the August basis restored.

▼ ▼ ▼

Barometer

INCREASES in the all-industry index since July (average: 4 per cent per month) brings the index nearer that of a year ago, even with that of Sept. and Oct., 1931. The gradual climb in metals, even though at a low level, may be more significant than movements in higher ranking industries.

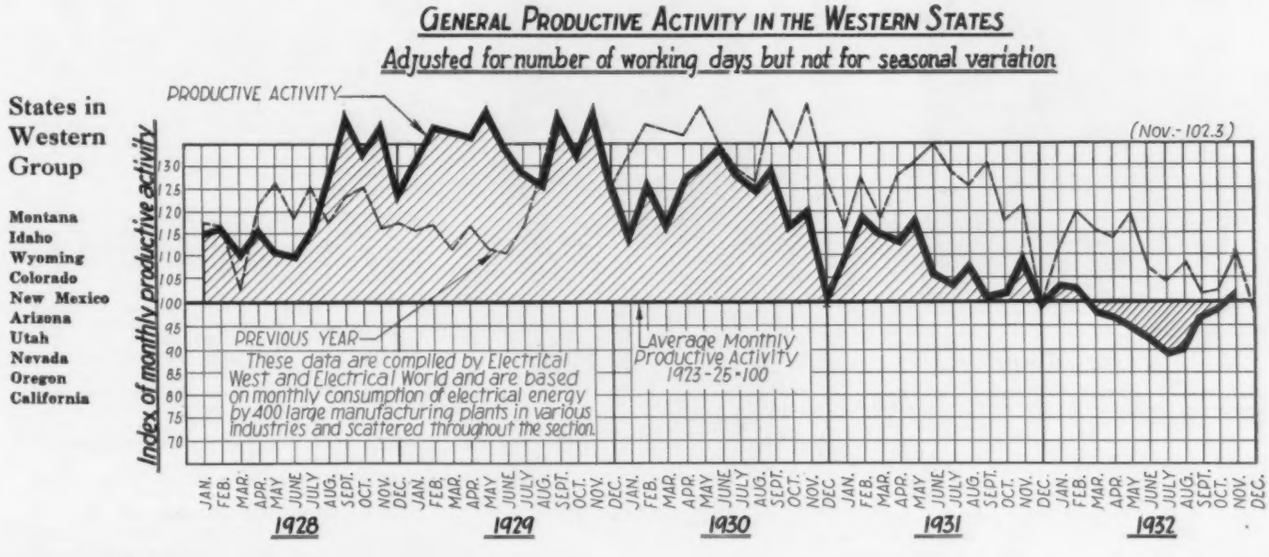
In forest products, activity is up about 10 per cent, good news to the Northwest. Renewed construction is indicated by lumber and stone, clay and glass activity. Shipbuilding took a big jump upward.

Indexes of Manufacturing Activity in the Western States

(All figures adjusted for number of working days)

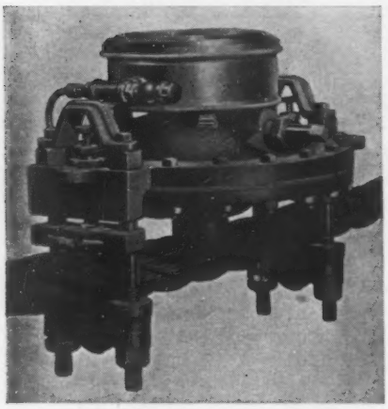
	Nov., 1932	Oct., 1932	Sept., 1932	Nov., 1931
All industry	102.3	96.8*	96.0	111.0
Chemicals	84.5	86.0*	85.2	101.5
Food	110.5	112.0*	120.0	154.4
Metals group	46.7	42.8*	38.4	41.1
Forest products	145.7	132.8	121.2	128.9
Paper and pulp	134.0	139.5	135.4	130.1
Rubber	62 5	75.8	84.5	68.1
Shipbuilding	113.0	88.5	108.0	98.1
Stone, clay and glass	74.0	71.3*	81.3	112.3

*Revision



New Products

Tension Indicators



Martin-Decker Corp., Long Beach, Calif., has designed and added a feeler gage to its tension indicators to increase their efficiency. A knurl-edged disk fitted beneath the V-blocks which receive the cable, the gage determines exactly when the instrument is in correct position on the cable for accurate reading. As the clamps are tightened, the disk may be turned freely with thumb or forefinger until correct pressure is applied; at this point, action of the disk is retarded by friction against the block. On the heavy-duty indicators, to eliminate the need for several deflection plugs to accommodate the different size lines under varying loads, a micrometer deflection adjustor and a saddle adjustor have been added.—Electrical West, Jan. 1, 1933.

▼

New Meter

For full utilization of "inverted" meter sequence, Duncan Electric Co., Lafayette, Ind., has announced Type MD new sequence meter. This incorporates the standard meter element in an extended base which contains a safety block that replaces the usual terminal arrangement. May be installed outdoors and may be tested without interruption of service.—Electrical West, Jan. 1, 1933.

Store Lights

Holophane Co., Inc. New York, has completed the development of new store lights which direct the light principally to the shelf and counter displays. As shown, unit is simple sphere suspended from ceiling; one-half of sphere is clear crystal prismatic hemisphere resting in a circular frame attached to opaque half by a hinge and latch. Furnished either tilted or level, depending on use. Model ST-200 (shown) for wall displays, model SL-200 for counters only.—Electrical West, Jan. 1, 1933.

▼

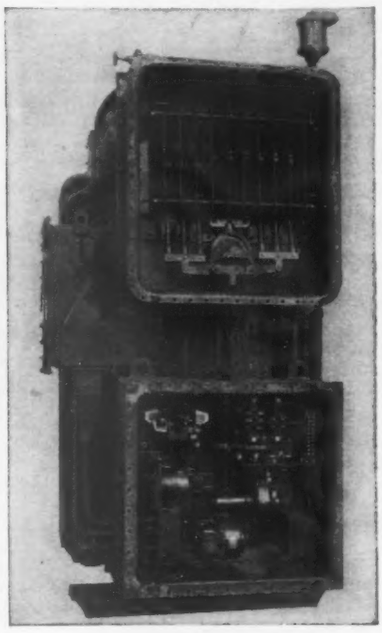
Premier Vacuum

The Premier Vacuum Cleaner Co., Cleveland, Ohio, has brought out a Premier Grand vacuum cleaner, Model 107. Rubber-mounted ¼-hp. motor fully enclosed. Extra large cleaning area provided. Mounted on four casters. Claimed to be much quieter in operation. Twenty-two feet of rubber-covered cord provided.—Electrical West, Jan. 1, 1933.

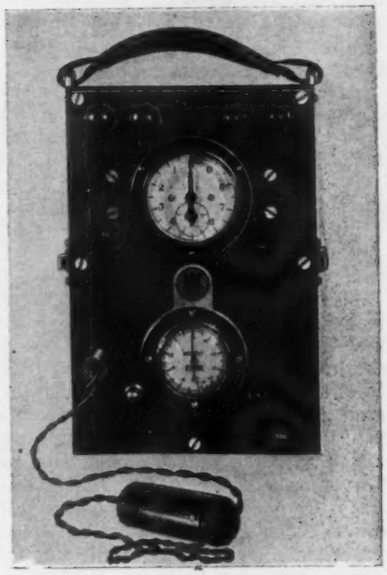
▼

Tap Changer

A new tap changer, announced by Westinghouse Electric & Mfg. Co., makes it practicable to apply tap changers to transformers as small as 500-kva. per phase, and is suitable for either single- or three-phase ratings. Three transfer switches (mounted in a separate compartment) to perform all load switch operations give an orderly and safe scheme of switching which, it is claimed, prevents arcing on the selector switch units even under the worst abnormal conditions.—Electrical West, Jan. 1, 1933.



Meter Standard



A portable stroboscopic meter standard for meter testing has been developed by Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Consists essentially of two main parts: a portable precision watthour meter, complete with dials and pointers suitable for conventional meter testing; and stroboscopic equipment for additional testing advantages. Latter equipment includes a light source (incandescent lamp), photo tube, power unit and amplifier connected to neon lamp through a flexible cord. In illustration, per cent error dial is at bottom. Total weight, 15 lb.—Electrical West, Jan. 1, 1933.

Trade Literature

¶ MOTORS—Reliance Electric & Eng. Co., Cleveland, has two bulletins: No. 114 on low-inertia, special torque, a.c. motors for quick acceleration, quick stopping and frequent and rapid reversing; No. 116 on type AA motors for flywheel applications.

¶ CONVEYOR—Stephens-Adamson Mfg. Co., Aurora, Ill., is distributing a booklet describing the principle upon which the Redler conveyor, which the company makes in the U.S., conveys horizontally, vertically, up inclines and around corners.

¶ BELTING—"Lubricated with Rubber" is the title of a booklet issued by The B. F. Goodrich Rubber Co., Akron, Ohio, on its Highflex belting.

¶ REFRIGERATORS—The Crosley Radio Corp., Cincinnati, Ohio, is distributing a 24-page illustrated booklet, "Crosley Facts," which deals with the development and manufacture of Crosley refrigerators.

¶ RECTIFIERS—Westinghouse Electric & Mfg. Co., East Pittsburgh, has issued a 16-page illustrated booklet (C-1907-B) on sectional type mercury-arc rectifiers.

¶ G.E. PUBLICATIONS—Recent releases of General Electric Co., Schenectady, N.Y., include the following:

GEA-1521A: 12 pages on low-temperature fuse links.

GEA-1678: reprint on Novalux enclosed copper-oxide cutouts for series street-lighting circuits.

GEA-1656: 4 pages on mehanical-drive turbines.

GEA-1659: 4 pages on electric steam generator.

GEA-1191A: 52-page catalog of synchronous motors.

Sell ELECTRIC COOKERY

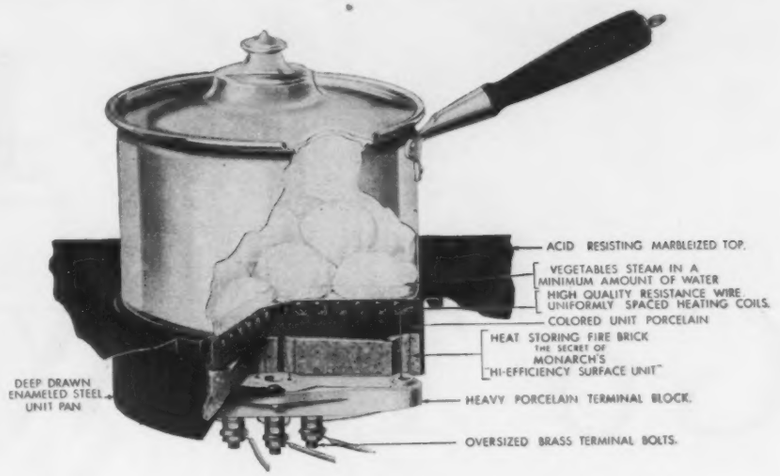
as an efficient modern method

providing both Speed and Economy with Exclusive Surface Unit Design

HOW does electric cookery compare with my present method—is it slower—is it more expensive?

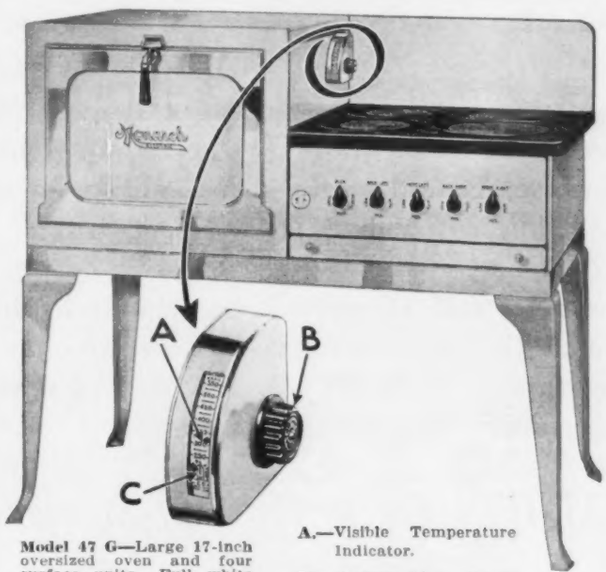
These two questions are uppermost in the minds of prospective purchasers and they offer a real opportunity for the Monarch dealer. Because, he can prove, beyond all question of doubt, that Monarch Electric Cookery is as fast and as economical as older methods—and provides many other outstanding advantages.

Continuous use in thousands of homes, and impartial laboratory tests have established the speed and remarkable economy of the Monarch Hi-Efficiency Surface Unit. Its scientific design and quality construction combines the advantages of others—the speed of the "open" type and the heat retaining properties of the "closed" unit, resulting in the utmost economy of time and of current, plus extreme durability and inexpensive replacement.


ACID RESISTING MARBLEIZED TOP.
VEGETABLES STEAM IN A MINIMUM AMOUNT OF WATER
HIGH QUALITY RESISTANCE WIRE UNIFORMLY SPACED HEATING COILS.
COLORED UNIT PORCELAIN
HEAT STORING FIRE BRICK THE SECRET OF MONARCH'S "HI-EFFICIENCY SURFACE UNIT"
DEEP DRAWN ENAMELED STEEL UNIT PAN
HEAVY PORCELAIN TERMINAL BLOCK.
OVERSIZED BRASS TERMINAL BOLTS.

Stress these principal points of the Monarch Hi-Efficiency Surface Unit:

1. Only genuine Nichrome wire, which withstands a temperature of 1700 F., is used. Even spacing distributes heat over entire surface and eliminates "hot-spots."



Model 47 G—Large 17-inch oversized oven and four surface units. Full white porcelain enamel with marbleized green acid resisting top. Available in Nile-Green or Ivory-Tan on special order.

A.—Visible Temperature Indicator.

B.—Automatic Oven Temperature Control.

C.—Illuminated Temperature Dial Strip.

2. Element is recessed in porcelain block of special refractory clay of extreme hardness and durability. Many bridges prevent wire buckling and contacting utensils. Four slots in porcelain provide for expansion.

3. Paramount insulating block, one inch thick, underneath porcelain block, prevents downward radiation and loss of heat and stores it for use after current is shut off. Liquids in a covered utensil will continue to boil from 15 to 25 minutes, due to this exclusive construction.

4. Both blocks (upper porcelain and Paramount insulating blocks) are encased in a heavy pressed steel pan, porcelain enameled inside and out, attractive in appearance and easily cleaned.

5. Monarch construction provides cool terminals and freedom from corroded and burned out wires. Connections to the supply wires are outside of unit pan and away from the heat. Only three wire connections per unit.

6. Monarch units are quickly and easily removed from top for cleaning. Holes in bottom of pan provide drainage.

7. The heating wire is extremely durable, yet replacement is inexpensive—a highly important consideration.

8. Unit bricks are green to harmonize with the green marbleized, acid resisting cooking top. Stains are scarcely noticeable and the color goes all the way through the brick.

Always take plenty of time to impress the prospect thoroughly with these distinct advantages of the Monarch Hi-Efficiency Surface Unit—and see how the sales resistance melts away.

Let us send you detailed information concerning the full line of Monarch Ranges.

MALLEABLE IRON RANGE CO.
3111 Lake St., Beaver Dam, Wisconsin

Central Station Representatives: .....**Chamblin-Thomas Company, 639 Mission Street, San Francisco, California**
Dealer Representative: .....**Glenn L. Brown, 3515 Kempton Place, Oakland, California**
Northwest Representative:.....**G. A. Lieser, 1218 17th Avenue North, Seattle, Washington**

Let's Go To Work!

All excuses for inaction have been relegated to the discard. "Wait until the turn of the year" won't work as an alibi any longer. Business will have to think up a new one.

Whether you finished 1932 in black or red ink is now only a matter of academic interest. *It's finished.* The important thing is to face facts as they are . . . . and start doing something. The time for inaction, the time for waiting is past.

Business will pick up when business men finally make up their minds *to sell.* A depression-weary public wants to work, wants to buy, wants to live. Despite depleted income, reduced wages, there's still a lot of buying power left. It's the selling power that's lacking right now.

This publication and others are full of news items relating to the *successful* efforts of certain utilities, manufacturers, dealers, who have seen the light and set out to sell. Even the year 1932 showed some conspicuous examples of aggressive advertising and selling.

The Profits in 1933 Will Go to the Self-Starters

ELECTRICAL WEST

ICE, SLEET .... miles of line down .... Wire stocks inadequate .... Rush shipments imperative .... Then, look to Jobbers of *Crapo* Galvanized Wire and Strand!

You can depend upon them in every emergency .... and, they in turn, can depend upon us .... for, they know from long experience, that RUSH orders received by us in the morning are shipped before night!

Indiana Steel & Wire Co.
Muncie, Indiana

Galvanized Telephone Wire and Steel Strand

Look for the *Crapo* Tag

INDIANA STEEL & WIRE CO — Crapo Galvanizing — MUNCIE, IND

Crapo
GALVANIZED PRODUCTS

Bound Volumes

FOUR BOUND VOLUMES, containing issues of Electrical West from January 1 to June 1, 1932, inclusive, may be purchased by calling at or writing to the office listed below. These volumes are half-bound in red leather, gold lettered, fully indexed. They are suitable for libraries, either private or company, and may be had for $7.50 each.

ELECTRICAL WEST
883 Mission Street . . . . San Francisco

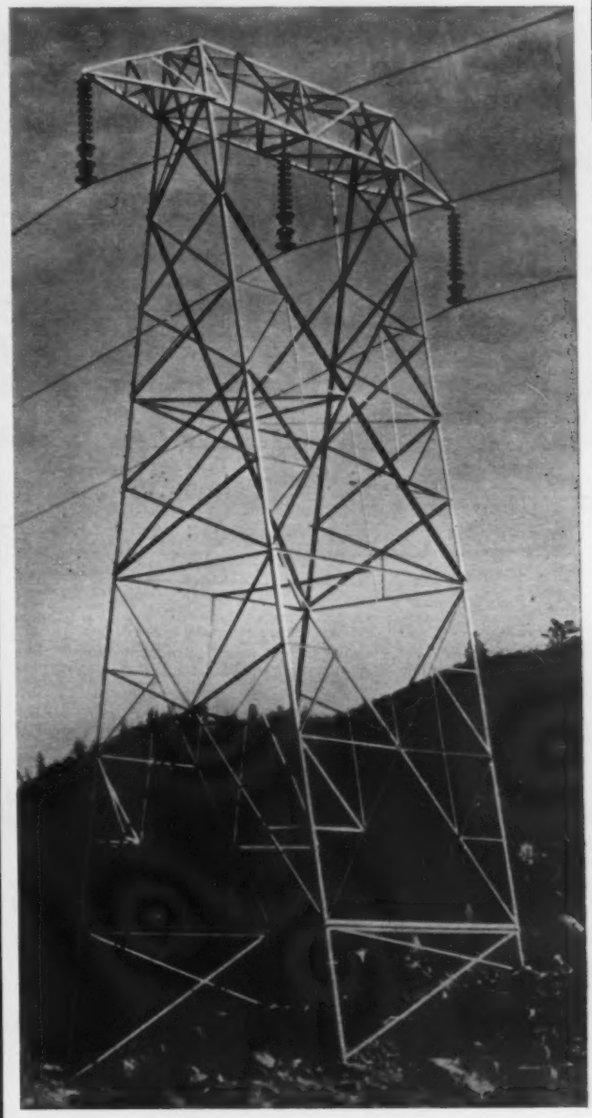
What Manufacturer Makes This?

Looking for the name and address of the maker of some electrical appliance? Want to know the name of the jobber or representative in your territory? Like to arrange for representation of some appliance?

All this is part of Electrical West's service. A phone call or letter to 883 Mission St., San Francisco, may solve your problem.

Electrical West — 883 MISSION STREET SAN FRANCISCO

MODERN TRANSMISSION STRUCTURES



Modern transmission towers, poles and substations are built of steel. Steel is the logical material for these structures because it offers a degree of safety and freedom from the possibility of service interruptions that cannot otherwise be obtained; and because of its economy in erection and maintenance, and its durability.

PACIFIC COAST STEEL
CORPORATION
Subsidiary of Bethlehem Steel Corporation

General Offices: BETHLEHEM STEEL San Francisco

District Offices: Seattle, Portland, Los Angeles, Honolulu
Export Distributor: Bethlehem Steel Export Corporation, New York

PROFESSIONAL DIRECTORY

BYLLESBY
ENGINEERING & MANAGEMENT CORPORATION
Wholly-owned Subsidiary of
Standard Gas and Electric Company
231 South LaSalle Street, Chicago
New York Pittsburgh San Francisco

ARTHUR R. KELLEY
CONSULTING ENGINEER
Reports and Valuations, Public Utility
Industrial Properties
Edison Bldg. Los Angeles

ELECTRICAL TESTING LABORATORIES
Electrical Photometrical, Chemical and Mechanical Tests. Inspection of Materials and Apparatus at Manufactory
80th St., and East End Ave., New York

Your card here builds favorable prestige for you. The cost is extremely small. The value is great as a business aid.

THE J. G. WHITE ENGINEERING CORPORATION
Engineers—Contractors
Oil Refineries and Pipe Lines, Steam and Water Power Plants, Transmission Systems, Hotels, Apartments, Office and Industrial Buildings, Railroads.
43 Exchange Place New York

In any line, a specialist does the best job.
Why not consult the firms listed here on your next undertaking?

INDEX TO ADVERTISEMENTS

This index is published as a convenience to the reader. Every care is taken to make it accurate, but ELECTRICAL WEST assumes no responsibility for errors or omissions

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NEAL, STRATFORD & KERR
STATIONERS -:- PRINTERS -:- ENGRAVERS
521 Market St. SAN FRANCISCO 1169 Russ Bldg.

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Looking for the name and address of the maker of some electrical appliance

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ELECTRICAL WEST
883 Mission St. San Francisco

YOUNGSTOWN BUCKEYE CONDUIT

EASY TO BEND

EASY TO INSTALL

THE YOUNGSTOWN SHEET AND TUBE CO.

One of the oldest manufacturers of copper-steel, under the well-known and established trade name "Copperoid"

GENERAL OFFICES—YOUNGSTOWN, OHIO

If You Could Visualize Tomorrow's Electrical Needs Today
Timely Advice
A Yardstick for Efficiency and Comfort in the Electrical Home
Adequately Wired
Cover Your Home With the Red Seal Stamp of Approval
The Red Seal "OK" Enhances the Value of Electrical Homes
Face Value
Pacific Coast ELECTRICAL BUREAU
447 Sutter Street San Francisco
M-15 Edison Building Los Angeles
848 Roosevelt Street Fresno
No Dwelling Keeps Modern unless Adequately Wired
Red Seal Approved
Pacific Coast ELECTRICAL BUREAU

Helping the Industry to

Meet a Quota

"Red Seal" Announcements Go Into Publications With Nearly 30,000 Copies Monthly

WHEN the first "Red Seal" drive was launched in 1926 by your Bureau, its object was to set up a plan in wiring new homes that would divorce the convenience outlet from the lighting fixture and to establish at least one convenience outlet per room (including kitchen and laundry porch). A further object was to increase lighting in the home to at least 1 watt per square foot. In the brief period of six years, over 100 major communities in California have legislated in favor of these points, including the requirement of No. 12 wire for all convenience outlet circuits.

The advantages of "Red Seal" minimum specifications in home building are being told and retold to individual home-builders, building contractors, architects and others through announcements like the miniature reproductions on this page under the guidance of the Red Seal Committee of the Pacific Coast Electrical Bureau. The four advertisements reproduced here have appeared in such publications as Sunset Magazine, West Coast Builder, Architect and Engineer, Arts and Architecture, Builder and Contractor, and Daily Pacific Builder, each advertisement reaching a combined total of nearly 30,000 subscribers.

This type of support, together with the descriptive literature prepared and distributed by the Bureau, is greatly assisting the industry in creating more and more "Red Seal" Homes to fulfill the quota for 1932 !

Pacific Coast

ELECTRICAL BUREAU

A non-profit organization supported by all branches of the industry as an advisory bureau to serve impartially all users of electricity

447 Sutter Street, *San Francisco*

Room M. 15 Edison Bldg. Los Angeles

848 Roosevelt Street Fresno

ELECTRICITY COSTS SO LITTLE IN CALIFORNIA